

# Michigan Alternate Assessment Program (MI-Access) Alignment Report

## *Links for Academic Learning*

### Report to the Michigan State Department of Education

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## EXECUTIVE SUMMARY

This report details findings from an investigation of the alignment of 2007 Michigan Alternate Assessment Program (MI-Access). The criteria used in this alignment study are being evaluated as part of the UNC Charlotte partnership in the *National Alternate Assessment Center* (NAAC). This report is organized by the eight criteria developed by a collaboration of content experts, special educators, and measurement experts at UNC Charlotte (Browder, Wakeman, Flowers, Rickleman, Pugalee, & Karvonen, 2006). While some of the alignment criteria are similar to other alignment methods (e.g., Webb, Surveys of Enacted Curriculum, and Achieve), additional criteria (criteria 5-8) were designed specifically as value indicators for students with significant cognitive disabilities (see Table 1).

A total of 893 AA-AAS items and 1472 extended standards were evaluated in this alignment study. Furthermore, the administration manual for Functional Independence (FI) and Participation/Supported Independence (P/SI), the FI and P/SI handbooks, the FI technical manual, the P/SI technical report, the P/SI standard setting summary, the item specifications for the FI and P/SI assessments, and the provided professional development materials were reviewed for some of the alignment criteria. A summary of the results by the alignment criteria are reported below.

### *Alignment Results by Criterion*

Criterion 1: *The content is academic and includes the major domains/strands of the content area as reflected in state and national standards (e.g., reading, math, science).*

Outcome: The following table reports the total number of items and extended standards, number items and extended standards rated academic, and percentage of academic items and extended standards by AA population (i.e., FI, SI, & P) and content areas (ELA, Math, Science). For the FI AA, almost all of the AA-AAS items and extended standards across all content areas were rated academic. For the SI and P, science had a high percentage of items (96% and 100%, respectively) and extended standards (87% and 95%) that were rated academic. There were lower percentages of items rated academic for ELA and math, ranging from 40% to 69%. Many of the nonacademic items were rated foundational.

Typically we expect 90% or more of the items rated as academic and those items that are nonacademic would be rated foundational (e.g., not simply sitting in a chair but rather orienting the book or turning the pages). While the Links for Academic Learning (LAL) does not differentiate the criteria by assessment level within Michigan's system, we expected the FI assessment would almost all academic items and that more foundational items would be found in the SI and P assessments. The 90% academic was achieved by all the FI assessments and science at all (i.e., FI, SI, and P) assessments. Given this finding, it may be feasible to increase the percent of academic items in ELA and math for the SI and P assessments. Most of the extended standards were rated academic. The increase in the number of nonacademic items and increase in foundational skills items are expected given the characteristics of the targeted populations intended for the SI and P AAs.

*Table 1: Number and Percentage of Academic Items and Extended Standards*

Alternate Assessment	Content Domain		Total <i>N</i>	Academic <i>N</i>	Academic %	Foundational <i>N</i>	Foundational %
FI							
	ELA	Items	295	295	100.0	0	0.0
		ExtStand	472	455	96.4	16	3.4
	Math	Items	233	232	99.6	1	0.4
		ExtStand	296	296	100.0	0	0.0
	Science	Items	119	119	100.0	0	0.0
		ExtStand	177	175	98.9	0	0.0
SI							
	ELA	Items	45	26	57.8	17	37.8
		ExtStand	90	87	96.7	1	1.1
	Math	Items	45	31	68.9	3	6.7
		ExtStand	84	76	90.5	5	6.0
	Science	Items	51	49	96.1	0	0.0
		ExtStand	134	127	94.8	3	2.2
P							
	ELA	Items	30	12	40.0	18	60.0
		ExtStand	70	66	94.3	1	1.4
	Math	Items	30	15	50.0	5	16.7
		ExtStand	49	38	77.6	11	22.4
	Science	Items	45	45	100.0	0	0.0
		ExtStand	100	87	87.0	2	2.0

*Recommendations*

The majority of the items were academic. However, it is recommended that the state review the nonacademic items and extended standards that were rated non-foundational (list provided in the report) and revise to strength the alignment to academic content.

**Criterion 2:** *The content is referenced to the student's assigned grade level (based on chronological age).*

**Outcome:** For the FI ELA and math AA, all items were referenced to a previous grade levels extended standards due to the state assessing in the Fall of the academic year. For example, the 3<sup>rd</sup> grade AA-AAS items were referenced to the 2<sup>nd</sup> grade extended standards. All the extended standards were referenced to the appropriate grade level standard except math extended standards—no references were provided. The FI science AA items were aligned to the appropriate extended standards. The SI and P AA items were referenced to grade band extended standards.

### *Recommendations*

The FI math extended standards need to be referenced to the grade level content standards.

**Criteria 3:** *The focus of achievement maintains fidelity with the content of the original grade level standards (content centrality) and when possible, the specified performance.*

**Outcome:** The following table summarizes the item and extended standards level results for the FI, SI, and P AAs. The bolded numbers indicate the percentage of items and extended standards that were rated as having a near or far for content centrality. Note that centrality is compared for extended standards with state standards and for AA-AAS items with extended standards. For the FI AAs, a high percentage of items (ranging from 90 to 99%) and extended standards (ranging from 87 to 95%) were rated near or far content centrality. Strengths and weaknesses were found for content centrality for both the SI and P formats. For SI, content centrality for items ranged from 57.8 to 88.2% suggesting the need for some review of the match between AA-AAS items and the extended standards. For SI, extended standards ranged from 66.4 to 85.6% which suggested the need for some review of the extensions. For P, content centrality ranged from 40 to 93.3%. There was a notable strength shown in the area of science items across all forms of the AA-AAS. For extended standards, content centrality ranged from 55 to 71%.

*Table 2: Content Centrality for FI, SI, and P extended standards and items*

	Functional Independence		Supported Independence		Participation	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<b>ELA</b>						
<b>Items (N)</b>	295		45		30	
Content Centrality	291	<b>98.6</b>	26	<b>57.8</b>	12	<b>40.0</b>
<b>Extended Standards (N)</b>	472		90		70	
Content Centrality	411	<b>87.1</b>	77	<b>85.6</b>	54	<b>77.1</b>
<b>Math</b>						
<b>Items (N)</b>	233		45		30	
Content Centrality	221	<b>94.8</b>	29	<b>64.4</b>	14	<b>46.7</b>
<b>Extended Standards (N)</b>	296		84		49	

Content Centrality	NA	NA	60	<b>71.4</b>	27	<b>55.1</b>
<b>Science</b>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<b>Items (N)</b>	119		51		45	
Content Centrality	107	<b>89.9</b>	45	<b>88.2</b>	42	<b>93.3</b>
<b>Extended Standards (N)</b>	177		134		100	
Content Centrality	169	<b>95.5</b>	89	<b>66.4</b>	71	<b>71.0</b>

### Recommendations

Review the AA-AAS items and extended standards that were rated *none* for content centrality and consider revisions to strengthen the alignment to grade level content standards.

**Criterion 4:** *The content differs from grade level in range, balance, and DOK, but matches high expectations set for students with significant cognitive disabilities.*

#### Outcome:

##### *FI Results*

**ELA Results:** Almost all the items were aligned to the reading strand with no items aligned to the reading domains of *metacognition*, *critical standards*, and *reading attitude*. The strand of *writing* only had one item that was aligned and *listening/viewing* had no items aligned. The distribution of the ELA items and extended standards across the levels of depth of knowledge (DOK) suggested that students are expected to demonstrate knowledge and skills at the higher DOK levels. The DOK level found in the extended standards were *at* or *above* the DOK found in the AA-AAS items. Items for the 4<sup>th</sup> and 5<sup>th</sup> grade had the same emphasis found in the extended standards but the other grade levels ELA items were not balanced across the different domains of reading. This was due to the inclusion of items for the domain of *informational text* in the 4<sup>th</sup> and 5<sup>th</sup> grade AA-AASs. The values found for range of knowledge indicate that many of the domains of reading were underrepresented.

**Math Results:** Most of the math strands had at least one item that was aligned to the domain. The DOK level found in the items and extended standards were remarkable, with most items and standards rated at the higher levels of DOK. This distribution is usually not found in alternate assessments and suggests that math items require much more than basic recall.

**Science Results:** All of the science strands had at least one item that was aligned to the strand. As with the math, the science DOK levels were remarkable—most items were aligned to the depth of knowledge levels of *comprehension* and *application*. The DOK levels found in the extended standards were similar as those levels found in the AA-AAS items. All the science strands had at least 50% of the standards with at least one aligned item.

### *SI and P Results*

Because there were few AA-AAS items, the indices for categorical concurrence, depth of knowledge, balance of representation, and range of knowledge were not calculated. Instead, a description of what academic strands that are represented on the *SI* and *P* AAs and a description of the depth of knowledge were provided.

**ELA Results:** For ELA, both the *SI* and *P* AAs content covered very few of the 18 ELA domains that were found in the standards and the DOK levels were often rated at *memorize/recall* and *performance* levels. There were some items at the *comprehension* and *application* levels.

**Math Results:** AA-AAS items were distributed across all the math strands. The item depth of knowledge ratings were distributed across the *performance*, *comprehension*, and *application*.

**Science Results:** AA-AAS items were distributed across all the science strands. The item depth of knowledge ratings were distributed across *memorize/recall*, *comprehension*, and *application* DOK levels.

### *Recommendation*

The state should provide a rationale for the narrowing of the reading categories and a lack of items in the strands of *writing* and *speaking and listening/viewing*.

### Criterion 5: *There is some differentiation in achievement across grade levels or grade bands.*

**Outcome:** Overall grade level differentiation was found for the extended standards (except for science for the *P* format). Mixed evidence was found for differentiation in the three alternate assessment formats. In the extended standards, grade level differentiation was strongest for the *FI* format and weakest for the *P* format. Some review of the redundancies in ELA and math is recommended for all three sets of extended standards (*FI*, *SI*, and *P*). In science, the overall differentiation of the extended standards is strong for the *FI* and *SI* formats although a few strands are noted for consideration of redundancy. In contrast, for the *P* level, the extended standards in science are not differentiated by grade bands.

For the alternate assessment items, the *FI* has exemplary differentiation in science, good differentiation in ELA, and adequate for math. Although some redundancies are noted in the report, this format of the AA-AAS clearly meets this criterion. For the *SI* format, science also meets expectations for differentiation. Some evidence of differentiation is also found for ELA and Math, but areas of redundancy are noted for future development. Differentiation for the *P* level is the most difficult to demonstrate and some redundancy is to be expected. It was notable that even though the extended standards for the *P* level had very limited differentiation, the alternate assessment did have some differentiation. Some differentiation was also found for language arts, but improvement is recommended in

both of these content areas for P. More academic items are needed for the P level of math to be able to evaluate differentiation.

Criterion 6: *The expected achievement for students is for the students to show learning of grade referenced academic content.*

Outcome: The MI-Access requires correct (accurate) student responses at all levels (FI, SI, and P). For FI, students perform the items in the test with minimal to no assistance. For this assessment, a strong inference can be made that students are demonstrating learning. For the SI and P, a scoring rubric does not give credit for hand-over-hand assistance, which suggests that inferences can be made about students' knowledge and skills. Students receive the most credit for responding without teacher assistance and fewer points for increasing assistance. While SI gives no credit for responding after a model, P does. These systems can make it possible to make strong inferences about student learning as well, but this is dependent on standard setting. The criteria currently set for "Attained" is below 40% on average which makes it possible for students to meet the standard with teacher verbal cues (SI) or modeling (P). As standards are reviewed in the future, a goal should be to increase expectations for more unprompted responses. Teachers may need professional development on prompt fading for this to be achievable.

Criterion 7: *The potential barriers to demonstrating what students know and can do are minimized in the assessment.*

Outcome: One of the strengths of this alternate assessment system is its overall responsiveness to the diversity within the population of students with significant cognitive disabilities by having three assessments accessible to a variety of students. Clear directions are given for accommodations for sensory and physical disabilities. The three levels of the alternate assessment and extended standards make provision for students with differing abilities within the 1% population to "show what they know." The overall system also reflects consideration of universal design of learning.

Criterion 8: *The instructional program promotes learning in the general curriculum.*

Outcome: The professional development materials provide clear information on state standards and support the assessment system. Less information was found on teaching to the standards and adapting grade level content. If this information is available in other state resources, it would probably benefit teachers to reference these in the assessment training.

The overall system promotes the values of self determination (especially choice making), assistive technology, literacy, and functional applications through professional training and in the overall assessment system. In contrast, there seemed to be little to no focus on teaching in general education contexts, using general education resources, or with inclusion with typical peers. While not essential to an alternate assessment system,



examples of each of these would be valuable additions to the professional development resources.

### ***Overall Analysis of Alignment***

The primary strength of the Michigan Alternate Assessment System (MI-Access) is its inclusiveness of the heterogeneity of students with significant cognitive disabilities (Participation, Supported Independence, and Functional Independence). By using formats at three levels and providing instruction on how to assess students with sensory and physical impairments, the system is well-developed for diverse students to show what they know. Science seems to be the content area with the strongest alignment within the assessment system. The system is also clearly focused on student performance and strong inferences can be made about student learning. The weakness of the system stems from its strength. In developing a three level system, the amount of work to extend standards and create alternate assessment items was tripled. In some cases, these items and extensions are well-aligned to the standards. The higher level (FI) has nearly perfect focus on academic items and the strongest content centrality. Alternate assessment items that are not academic in the lower levels (SI and P) are for the most part foundational to academic success. Thus, it could be concluded that overall the grade level standards are well represented. In contrast, when a finer grained analysis is conducted to consider content centrality, some of the academic items and some of the extended standards do not reflect clear links to grade level content standards. Some additional development of these items is recommended. During this development, consideration should also be given to grade level and/or grade span differentiation which, similar to content centrality, currently reflects both strong and weak areas.

## MICHIGAN ALTERNATE ASSESSMENT PROGRAM ALIGNMENT REPORT

This alignment study was conducted on the basis of information obtained on the 2007 ELA (3<sup>rd</sup> – 8<sup>th</sup> and 11<sup>th</sup> grades), Math (3<sup>rd</sup> – 8<sup>th</sup> and 11<sup>th</sup> grades), and Science (5<sup>th</sup>, 8<sup>th</sup>, and 11<sup>th</sup>) Michigan Alternate Assessment Program (MI-Access). MI-Access has three assessments for each subject area, each of which is targeted at a distinct student population. These assessments reflect the Michigan Department of Education's intent to develop a continuum of assessments that are appropriate for students with disabilities based on their differing cognitive functioning levels, curriculum, and instruction.

The criteria in this alignment study are being evaluated as part of the UNC Charlotte partnership in the *National Alternate Assessment Center* (NAAC). This report is organized by the eight criteria developed by a collaboration of content experts, special educators, and measurement experts at UNC Charlotte (Browder, Wakeman, Flowers, Rickleman, Pugalee, & Karvonen, 2006). While some of the alignment criteria are similar to other alignment methods (e.g., Webb, Surveys of Enacted Curriculum, and Achieve), additional criteria (criteria 5-8) were designed specifically as value indicators for students with significant cognitive disabilities (see Table 1).

All reviewers were instructed on the purpose of alternate assessments and reviewed all the testing materials and academic content standards provided by the state of Michigan. The content reviewers rated the alignment of AA-AAS items to grade level content standards as a team until there was consensus. After both the content experts reached consensus, they rated subsequent items independently. Independent ratings of some AA-AAS items were used to evaluate inter-rater agreement. Special education experts rated the student work or artifacts, professional development materials, and the age appropriateness and symbolic levels of the standards and AA-AAS items.

### DESCRIPTION OF MICHIGAN STANDARDS AND ALTERNATE ASSESSMENT PROGRAM

A description of the three MI-Access alternate assessments (i.e., Functional Independence, Supported Independence, and Participation) is below.

#### ***Functional Independence (FI)***

The MI-Access Functional Independence assessments are designed for students who have, or function as if they have, *mild* cognitive impairment. They also have a limited ability to generalize learning across contexts and their learning rates are significantly slower than those of their age-level peers. In adulthood, however, these students will most likely be able to meet their own needs and live successfully in their communities without overt support from others. They also will be able to assess their personal strengths and limitations, and access resources, strategies, supports, and linkages that will help them maximize their independence (2007/2008 MI-Access Coordinator and Assessment Administration Manual).

### ***Supported Independence (SI)***

The MI-Access Supported Independence assessments are designed for students who have, or function as if they have, *moderate* cognitive impairment. These students are expected to require ongoing support in adulthood. They may also have both cognitive and physical impairments that impact their ability to generalize or transfer learning; however, they usually can follow learned routines and demonstrate independent living skills (2007/2008 MI-Access Coordinator and Assessment Administration Manual).

### ***Participation (P)***

The MI-Access Participation assessments are designed for students who have, or function as if they have, *severe* cognitive impairment. These students are expected to require extensive, ongoing support in adulthood. They may also have considerable cognitive and physical impairments that make determining their abilities and skills difficult (2007/2008 MI-Access Coordinator and Assessment Administration Manual).

Extended standards were created by the state. The links between the extended standards to the grade level content standards were provided for all subjects except FI math. For the FI AA-AAS, ELA and math were not referenced to the grade level of the student, but were referenced to the previous grade level (e.g., the 3<sup>rd</sup> grade AA-AAS items were referenced to the 2<sup>nd</sup> grade extended standards) due to the state assessing students in the Fall of each academic year. For the SI and P assessments, the items were referenced to grade bands.

## **EXPERT REVIEWERS**

The alignment team consisted of two English Language Arts (ELA) experts, two Mathematics experts, two Science experts, four experts in the education of students with significant cognitive disabilities, and one measurement expert. Content experts had a range of experience in their content area of 9 to 31 years and special education experts had a range of 8-30 years. The level of education ranged from a bachelor's degree (1 content expert) to a doctoral degree or individuals participating in a PhD program (1 content expert, 4 special education experts, 1 measurement expert). All experts had participated in conducting professional development related to their content area. Seven of the experts have been involved in curriculum writing on their district, state, or national level (e.g., textbook writing). One of the experts was nationally board certified in their content area. Four experts had a licensure in curriculum and instruction. Five experts taught higher education classes. Finally, seven of the experts had been item writers for their state's general and special education assessments.

At the beginning of each alignment activity, the team worked together to come to a consensus on the alignment of educational components. When experts disagreed, decision rules were made to ensure consistency. Then the reviewers independently rated a subset of items/standards/extended standards and agreement between raters was examined. When the raters agreed 90%, each rater was given specific tasks. Reliability was checked periodically throughout the tasks to ensure consistent ratings.

## CRITERIA FOR ALIGNING ALTERNATE ASSESSMENTS TO GRADE LEVEL ACADEMIC CONTENT

Non-regulatory guidance has specified that alternate assessments “should be clearly related to grade-level content, although it may be restricted in scope or complexity or take the form of introductory or prerequisite skills” (U.S. Department of Education, 2005, p.26). As stated in this regulation, there should be a clear *link* to the content standards for the grade in which the student is enrolled. While this gives states flexibility to determining the scope and breadth of content of alternate assessments, it does not exempt states from designing assessments that measure an academic domain with interpretable results and accurately reflecting what the student knows and can do within that academic domain. For this reason, the authors believe that the investigation of alignment between academic content, academic performance, alternate assessments, and instructional practices and resources should be as strenuous as those used for the assessment of students in the general population. In contrast, it is also expected there would be some differences in the depth, breadth or complexity of content addressed when the achievement target is an alternative to grade level achievement. Because of the unique characteristics and needs of students with significant cognitive disabilities (e.g., testing formats and instructional practices), additional alignment criteria also need to be considered for alternate assessments.

In our conceptual framework, we propose eight criteria for linking to grade-level academic content standards (see Table 1). To be linked to grade level standards, the target for achievement must be academic content (e.g., reading, math, science) that is referenced to the student’s assigned grade based on chronological age. Functional activities and materials may be used to promote understanding, but the target skills for student achievement are academically-focused. Some prioritization of the content will occur in setting this expectation, but it should reflect the major domains of the curricular area (e.g., strands of math) and have fidelity with this content and how it is typically taught in general education. The alternate expectation for achievement may focus on prerequisite skills or some partial attainment of the grade level, but students should still have the opportunity to meet high expectations, to demonstrate a range of cognitive demand, to achieve within their level of symbolic communication, and to show growth across grade levels or grade bands.

*Table 3: Criteria for Instruction and Assessment that Links to Grade Level Content*

- |  |
|--|
| <ol style="list-style-type: none"><li>1. The content is academic and includes the major domains/strands of the content area as reflected in state and national standards (e.g., reading, math, science).</li><li>2. The content is referenced to the student's assigned grade level (based on chronological age).</li><li>3. The focus of achievement maintains fidelity with the content of the original grade level standards (content centrality) and when possible, the specified performance.</li><li>4. The content differs from grade level in range, balance, and DOK, but matches high expectations set for students with significant cognitive disabilities.</li><li>5. There is some differentiation in content across grade levels or grade bands.</li><li>6. The expected achievement for students is for the students to show learning of grade referenced academic content.</li><li>7. The potential barriers to demonstrating what students know and can do are minimized in the assessment.</li><li>8. The instructional program promotes learning in the general curriculum.</li></ol> |
|--|

The following sections report the results of the pilot alignment method organized around the eight criteria, as applied to Michigan's alternate assessment system, MI-Access.

## ALIGNMENT RESULTS

The results in this study are reported by MI-Access assessment (FI, SI, or P), subject domain (ELA, math, and science), and grade level or grade band. The following table provides the total number of items and extended standards reviewed for this alignment study.

*Table 4: Total Number of Items and Extended Standards Review*

		FI	SI	Part
		<i>N</i>	<i>N</i>	<i>N</i>
ELA	Items	295	45	30
	Extended Standards	472	90	70
Math	Items	233	45	30
	Extended Standards	296	84	49
Science	Items	119	51	45
	Extended Standards	177	134	100

To provide evidence of the reliability of expert ratings, at least 17% of all materials rated were independently read by a second rater and coded. The table below indicates the percentage of components that received a second read and the percentage of exact agreement between the initial rater and the second rater. The percent exact agreement ranged from 85 to 100%.

*Table 5: Reliability of Ratings*

<i>Component</i>	<i>Grade Level Standards</i>		<i>Extended Standards</i>		<i>FI</i>		<i>SI</i>		<i>Part</i>	
	<i>Double Coded %</i>	<i>Exact Agree %</i>	<i>Double Coded %</i>	<i>Exact Agree %</i>	<i>Double Coded %</i>	<i>Exact Agree %</i>	<i>Double Coded %</i>	<i>Exact Agree %</i>	<i>Double Coded %</i>	<i>Exact Agree %</i>
ELA	24.7	93.4	29.7	89.8	54	100	17	89	33	87.6
Math	21.7	95.5	22.7	86.6	45	89.7	17	90.1	16	97.5
Science	16.5	89.8	25.2	93.3	22	98.5	60	95.1	66	85
Special Education	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	49	100	27	96	34	100

Approximately 20% of the data were checked for accuracy of data entry. The percentage accuracy of the data entry ranged from 98% to 100% across all the databases (i.e., items, extended standards, and grade level standards).

**Criterion 1:** The content is academic and includes the major domains/strands of the content areas as reflected in national standards as defined by the National Council of Teachers of English (NCTE) and National Council of Teachers of Mathematics (NCTM).

Criterion 1 requires content experts to determine if the AA-AAS items and extended standards are academic. AA-AAS items that are not academic are not included in any further analyses. In order to be rated nonacademic, content experts must agree (either by identical, independent ratings or by consensus after different ratings) that the AA-AAS item and extended standard was indeed nonacademic. To make these decisions, reviewers are asked whether the item/standard/descriptor can be logically defined by a national standard for that content area. National standards are defined according to the national content organizations (National Council of Teachers of English and National Council of Teachers of Math). If the standard or assessment item can be labeled according to a strand/component within the national standards, the reviewer codes it as academic. The national standards are used for academic coding purposes only. States are only required to align to state standards.

Some skills may be *foundational skills* or those skills which are an assumed competence across all grade levels specific to an academic context such as turning the pages of a book. While these skills are not academic skills (i.e., cannot be defined by a national strand), they may be appropriate for some students with significant cognitive disabilities. Furthermore, nonacademic items are coded for symbolic level of communication. A student at the awareness/presymbolic level communicates through gestures and objects (e.g., holding up a cup when thirsty). In the concrete symbolic level, the student uses some symbols to communicate (e.g., provides teacher with a picture of a cup when thirsty). At the abstract symbolic level, the student communicates with multiple symbols (e.g., concrete and abstract picture symbols) or words (e.g. provides teacher with written word “cup” when thirsty).

The following results are presented by MI-Access population assessed, content domain, and grade level or grade band. Since each assessment (FI, SI, and P) was designed for specific student populations, the number of items rated foundational skills and presymbolic are expected to be greater for the SI and P assessments than found in the FI assessment.

## **Functional Independence (FI)**

### ***English Language Arts (ELA)***

#### ***Items***

**A total of 295 FI ELA items were reviewed and all (100%) were rated academic.** Almost all of the items ( $n=288$ , 98%) were aligned to the ELA component of reading with a few items ( $n=7$ , 2%) aligned to the ELA component of writing (see Appendix A). Some of the items ( $n=42$ , 14.2%) were rated as having a secondary alignment. ELA components of speaking, listening, and research did not have any items that aligned which parallels the grade level assessments.

### *Extended Standards*

A total of 472 FI extended standards (all extended standards- not only assessed standards) were reviewed (one extended standard was missed in the coding). **There were 455 (96.4%) extended standards rated academic and 17 (3.6%) rated nonacademic.** Because some extended standards are repeated across grade levels, of the 17 nonacademic extended standards only seven were unique. Sixteen of the 17 nonacademic extended standards were rated foundational and all 17 nonacademic extended standards were rated at the presymbolic communication level. The nonacademic extended standards are listed in the following table.

*Table 6: List of FI Extended Standards Rated Nonacademic*

Grade	Extended Standard	Foundational Level	Symbolic Level
2	Be enthusiastic about writing and learning to write.	Non-Foundational	Presymbolic
2	Become enthusiastic about reading and learning how to read.	Non- Foundational	Presymbolic
2	Begin to differentiate between sender and receiver, such as recognizing that the viewer/listener receives messages, but can also send them.	Foundational	Presymbolic
3	Be enthusiastic about writing and learning how to write.	Non-Foundational	Presymbolic
3	Become enthusiastic about reading and learning how to read.	Non-Foundational	Presymbolic
4	Be enthusiastic about reading and learning how to read.	Non-Foundational	Presymbolic
4	Be enthusiastic about writing and learning to write.	Non- Foundational	Presymbolic
5	Be enthusiastic about reading and learning how to read.	Non- Foundational	Presymbolic
5	Be enthusiastic about writing and learning to write.	Non-Foundational	Presymbolic
6	Be enthusiastic about reading and learning how to read.	Non-Foundational	Presymbolic
6	Be enthusiastic about writing and learning how to write.	Non-Foundational	Presymbolic
7	Be enthusiastic about reading for leisure and to gain information.	Non-Foundational	Presymbolic
7	Be enthusiastic about writing.	Non-Foundational	Presymbolic
8	Be enthusiastic about reading for leisure and to gain information.	Non-Foundational	Presymbolic
8	Be enthusiastic about writing.	Non-Foundational	Presymbolic
11	Be enthusiastic about writing.	Non-Foundational	Presymbolic
11	Be enthusiastic about writing.	Non-Foundational	Presymbolic

Appendix B describes the number of FI extended standards that were aligned to the components of ELA. The component of reading had the most extended standards, followed by the components of writing, speaking, and listening.

### *Math*

#### *Items*

**A total of 233 FI items (field testing items removed) were reviewed. Almost all math items ( $n=232$ , 99.6%) were rated academic.** The one nonacademic item (3rd grade, question



#20, Item #20001036) was rated foundational and presymbolic. The distribution of the items across the components of math is reported in Appendix A.

### *Extended Standards*

**A total of 296 FI extended standards (all standards) were reviewed and all were rated academic.** The distribution of the extended standards across the national components of math is reported in Appendix B. Approximately half of the extended standards (48%) were aligned to numbers and operations.

## ***Science***

### *Items*

**A total of 119 FI science items were reviewed and all items were rated academic.** The distribution across the components of science is reported in Appendix A. Three of the science components (i.e., physical science, life science, and earth & space science) are the most popular science components.

### *Extended Standards*

**A total of 177 FI science extended standards (all standards) were reviewed and almost all ( $n=175$ , 98.9%) were rated academic.** The two (1.1%) nonacademic extended standards were not foundational and were rated at the abstract symbolic level of communication. The extended standards were: (a) Identify public uses of water, and (b) Identify and explain appropriate safety precautions during severe weather.

The distribution of extended standards across the components of science is reported in Appendix B.

## **Supported Independence**

### ***ELA***

### *Items*

**Of the 45 SI ELA items reviewed, 26 (57.8%) were rated academic and 19 (42.2%) nonacademic.** Seventeen of the 19 nonacademic items (89.5%) were rated foundational and all 19 were rated as presymbolic. A list of the nonacademic items is reported below.

*Table 7: SI ELA Non Academic AA-AAS items*

Grade Band	Question #	Item #	Foundational Level	Symbolic Level
Elementary	6	52001	Non-foundational	Presymbolic
Elementary	9	52016	Foundational	Presymbolic
Elementary	10	52012	Foundational	Presymbolic
Elementary	11	52085	Foundational	Presymbolic
Elementary	13	52063	Foundational	Presymbolic
Elementary	15	52013	Foundational	Presymbolic
Elementary	17	52018	Foundational	Presymbolic
Elementary	18	52086	Foundational	Presymbolic
Elementary	19	52087	Foundational	Presymbolic
Middle	6	52001	Non-foundational	Presymbolic
Middle	7	52077	Foundational	Presymbolic
Middle	13	52018	Foundational	Presymbolic
Middle	18	52060	Foundational	Presymbolic
Middle	19	52013	Foundational	Presymbolic
High School	9	52023	Foundational	Presymbolic
High School	13	52013	Foundational	Presymbolic
High School	14	52018	Foundational	Presymbolic
High School	15	52019	Foundational	Presymbolic
High School	18	52217	Foundational	Presymbolic

The distribution of the academic ELA items across the components of SI ELA is reported in Appendix A.

### *Extended Standards*

**Of all 90 SI extended standards, 87 (96.7%) were rated academic.** One of the three nonacademic extended standards was rated foundational and all three nonacademic extended standards were rated at the presymbolic level of communication. A list of the nonacademic extended standards is in the following table.

*Table 8: SI ELA Non Academic Extended Standards*

Grade	Extended Standard	Foundational Level	Symbolic Level
4	Be enthusiastic about writing and learning how to write, (e.g. selecting a variety of age appropriate words/symbols to write).	Non-Foundational	Presymbolic
7	Recognize the need for appropriate voice volume in varied contexts, (e.g. outside, classroom).	Non - Foundational	Presymbolic
5	Recognize the need for appropriate voice volume in varied contexts, (e.g. playground, classroom).	Non-Foundational	Presymbolic

The distribution of extended standards associated with SI ELA components is reported in Appendix B.

## Math

### Items

**Of the 45 SI math items, 31 (68.9%) were rated academic.** Three (21.4%) of the 14 nonacademic math items were rated foundational and all 14 nonacademic items were rated at the presymbolic communication level. The nonacademic items are listed in the following table.

*Table 9: SI Math Non Academic AA-AAS items*

Grade Band	Question #	Item #	Foundational Level	Symbolic Level
Elementary	21	52093	Foundational	Presymbolic
Elementary	23	52095	Non-Foundational	Presymbolic
Elementary	25	52097	Foundational	Presymbolic
Elementary	30	52115	Non-Foundational	Presymbolic
Elementary	31	52116	Non-Foundational	Presymbolic
Elementary	37	52155	Non-Foundational	Presymbolic
Elementary	38	52125	Non-Foundational	Presymbolic
Middle	25	52110	Non-Found	Presymbolic
Middle	29	52199	Non-Found	Presymbolic
Middle	33	52128	Foundational	Presymbolic
High School	23	52106	Non-Found	Presymbolic
High School	26	52122	Non-Found	Presymbolic
High School	27	52124	Non-Found	Presymbolic
High School	29	52126	Non-Found	Presymbolic

The number and percentage of items for the SI math components are reported in Appendix A.

### Extended Standard

**Of all 84 SI extended standards, 76 (90.5%) were rated academic.** Five of the 8 (62.5%) nonacademic extended standards were rated foundational and all the nonacademic extended standards were at the presymbolic level. The nonacademic extended standards are listed below.

*Table 10: SI Math Non Academic Extended Standards*

Grade	Extended Standards	Foundational
3	Follow complete or partial daily routine patterns-limited to 2 steps.	Foundational
4	Check and/or complete sets of corresponding tasks. This may include multiple uses of 1:1 correspondence necessary to complete a single task.*	Non-Foundational
5	Read a work/activity schedule for classroom and job related activities.	Foundational
6	Follow complete or partial daily routine patterns-limited to 3 steps.	Foundational
7	Check and/or complete sets of corresponding tasks. This may include multiple uses of 1:1 correspondence necessary to complete a single task.*	Non-Foundational
5	Read a work/activity schedule for classroom and job related activities.	Foundational
6	Follow complete or partial daily routine patterns-limited to 3 steps.	Foundational
7*	Check and/or complete sets of corresponding tasks. This may include multiple uses of 1:1 correspondence necessary to complete a single task.*	Non-Foundational

\*For this extended standard, the example that is written would allow the student to complete the task without any math skills. It is recommended that this standard be rewritten for clarity with an example that would require 1:1 correspondence.

The distribution of academic extended standards across the SI math components is listed in Appendix B.

## ***Science***

### ***Items***

**Of the 51 SI items reviewed, 49 (96.1%) were rated academic.** The two nonacademic items (5<sup>th</sup> grade item #22111 and 8<sup>th</sup> grade item #22393) were not rated foundational. The distribution of academic items across the science components is reported in Appendix A.

### ***Extended Standards***

**Of all 134 SI science extended standards review, 127 (94.8%) were rated academic.** Three of the 7 nonacademic extended standards were foundational and 3 nonacademic extended standards were presymbolic.

*Table 11: SI Science Non Academic Extended Standards*

Grade Band	Extended Standard	Foundational	Symbolic
1	Identify differences between day and night.	Foundational Non-	Concrete
2	Identify safety precautions with liquid and solid forms of water.	Foundational Non-	Presymbolic
2	Identify sources of water and its household/personal uses.	Foundational Non-	Presymbolic
2	Identify appropriate safety precautions during severe weather.	Foundational	Presymbolic
1	Distinguish between true and false.	Foundational Non-	Abstract
2	Distinguish between fact and opinion.	Foundational	Abstract
1	Identify how materials are useful.	Foundational	Abstract

The distribution of academic extended standards across the SI science strands is listed in Appendix B.

## Participation

### *ELA*

#### *Items*

A total of 30 MI-Access Participation items were reviewed. **Content experts rated 12 (40%) items academic and 18 (60%) items nonacademic.** All of the nonacademic items were rated foundational and almost all (17 of the 18 nonacademic items) were rated at the presymbolic communication level. The nonacademic ELA items are reported in the following table.

*Table 12: P ELA Non Academic AA items*

Grade Band	Question #	Item #	Foundational Level	Symbolic Level
Elementary	5	72021	Foundational	Presymbolic
Elementary	10	72050	Foundational	Presymbolic
Elementary	11	72053	Foundational	Presymbolic
Elementary	13	72063	Foundational	Presymbolic
Elementary	14	72071	Foundational	Presymbolic
Middle	5	72134	Foundational	Presymbolic
Middle	6	72189	Foundational	Presymbolic
Middle	10	72133	Foundational	Presymbolic
Middle	11	72145	Foundational	Presymbolic
Middle	13	72049	Foundational	Presymbolic
Middle	14	72072	Foundational	Presymbolic
High School	1	72074	Foundational	Concrete
High School	5	72065	Foundational	Presymbolic
High School	7	72067	Foundational	Presymbolic
High School	10	72019	Foundational	Presymbolic
High School	11	72026	Foundational	Presymbolic
High School	13	72132	Foundational	Presymbolic
High School	14	72050	Foundational	Presymbolic

The distribution of the academic items across the P ELA components is reported in Appendix A.

#### *Extended Standards*

**Seventy P extended standards were reviewed by content experts (all extended standards) and most ( $n=66$ , 94.3%) were rated academic.** Of the 4 nonacademic, one was rated foundational and all were rated at the presymbolic level. A list of the nonacademic extended standards is reported in the following table.

*Table 13: P ELA Non Academic Extended Standards*

Grade	Extended Standard	Foundational
4	Be enthusiastic about using written communication and communication devices.	Non-Foundational
7	Be enthusiastic about using written communication and communication devices.	Non-Foundational
7	Recognize the need for appropriate voice volume in familiar settings, (e.g. outside, classroom).	Non-Foundational
5	Recognize the need for appropriate voice volume in familiar settings, (e.g. playground, classroom).	Non-Foundational

The distribution of P extended standards across the ELA components is reported in Appendix B. Most of the extended standards aligned to the component of reading.

## *Math*

### *Items*

**Thirty P math items were reviewed and half ( $n=15$ ) were rated academic.** Five of the 15 (33.3%) nonacademic items were rated foundational and all of the nonacademic items were rated at the presymbolic level of communication. A list of the nonacademic items is reported below.

*Table 14: P Math Non Academic AA-AAS items*

Grade Band	Question #	Item #	Foundational	Symbolic Level
Elementary	16	72169	Non-Foundational	Presymbolic
Elementary	20	72091	Non-Foundational	Presymbolic
Elementary	23	72173	Non-Foundational	Presymbolic
Elementary	26	72104	Non-Foundational	Presymbolic
Elementary	29	72110	Foundational	Presymbolic
Middle	16	72082	Non-Foundational	Presymbolic
Middle	20	72137	Foundational	Presymbolic
Middle	25	72110	Foundational	Presymbolic
Middle	26	72148	Non-Foundational	Presymbolic
Middle	28	72139	Non-Foundational	Presymbolic
High School	16	72082	Non-Foundational	Presymbolic
High School	20	72158	Foundational	Presymbolic
High School	25	72110	Foundational	Presymbolic
High School	26	72161	Non-Foundational	Presymbolic
High School	28	72152	Non-Foundational	Presymbolic

The distribution of P items across the components of math is reported in Appendix A.

### *Extended Standards*

**Of all 49 P extended standards, 38 (78%) were rated academic.** Three of the 11 (27.3%) nonacademic extended standards were rated foundational and 11 were rated at the presymbolic level of communication.

*Table 15: P Math Non Academic Extended Standards*

Grade	Extended Standard	Foundational Level
2	Differentiate between themselves and an inanimate object.	Non-Foundational
2	Follow an eating, dressing, or physical activity pattern/sequence-limited to indicating or engaging in the next step.	Foundational
4	Differentiate between warm and cold items.	Non-Foundational
2	Differentiate between themselves and another person.	Non-Foundational
2	Follow an eating, dressing, or physical activity pattern/sequence-limited to indicating or engaging in the next step.	Foundational
4	Differentiate between warm and cold items.	Non-Foundational
5	Self-awareness of position. Students will know the difference between standing up and sitting down (ambulatory students only).	Non-Foundational
2	Differentiate between themselves and another person.	Non-Foundational
2	Follow an eating, dressing, or physical activity pattern/sequence-limited to indicating or engaging in the next step.	Foundational
4	Differentiate between warm and cold items.	Non-Foundational
5	Self-awareness of position. Students will know the difference between standing up and sitting down (ambulatory students only).	Non-Foundational

The distribution of P extended standards across the components of math is reported in Appendix B.

## ***Science***

### ***Items***

**All 45 P science items (100%) were rated academic.** The distribution of academic items across the science components is reported in the following table. The distribution of science items across the science components are reported in Appendix A.

### ***Extended Standards***

**Of all 100 P science extended standards review, 87 (87%) were rated academic.** Two of the 13 nonacademic extended standards were foundational and 11 nonacademic extended standards were rated at the presymbolic communication level.

*Table 16: P Science Non Academic Extended Standards*

Grade Band	Extended Standard	Foundational	Symbolic
Elementary	Identify where water is found in the home and school.	Non-Foundational	Presymbolic
Elementary	Identify appropriate activities related to weather conditions.	Non-Foundational	Presymbolic
Middle	Identify where water is found in the home, school, and community.	Non-Foundational	Presymbolic
Middle	Identify routines involving the use of water in various personal, household, and recreational situations.	Non-Foundational	Presymbolic
Middle	Identify clean vs. unclean water.	Non-Foundational	Presymbolic
Middle	Identify appropriate clothing and/or activities related to particular weather conditions.	Non-Foundational	Presymbolic
Middle	Identify and/or engage appropriately in safety procedures related to weather conditions.	Non-Foundational	Presymbolic
High School	Identify clean vs. unclean water.	Non-Foundational	Presymbolic
High School	Identify appropriate clothing and/or activities related to particular weather conditions.	Non-Foundational	Presymbolic
Elementary	Identify books and/or other sources of information.	Foundational	Presymbolic
Middle	Develop awareness of personal information.	Non-Foundational	Presymbolic
High School	Develop awareness of personal information.	Non-Foundational	Presymbolic
Elementary	Identify how materials are useful.	Foundational	Abstract

The distribution of science extended standards across the components of science is displayed in Appendix B.

## SUMMARY AND RECOMMENDATIONS

The following table summarizes the total number of items and extended standards, number items and extended standards rated academic, and percentage of academic items and extended standards by MI-Access population and content areas. For the Functional Independence AA, almost all of the AA-AAS items and extended standards across all content areas were rated academic. For the Supported Independence and Participation, science had a high percentage of items (96% and 100%, respectively) and extended standards (87% and 95%) that were rated academic. There were lower percentages of items rated academic for ELA and math, ranging from 40% to 69%. Many of the nonacademic items were rated foundational. The extended standards were mostly rated academic.

*Table 17: Summary by Assessment of Academic and Foundational Ratings for Items and Extended Standards*

MI-Access Population	Content Domain		Total <i>N</i>	Academic <i>N</i>	Academic %	Foundational <i>N</i>	Foundational %
FI	ELA	Items	295	295	100.0	0	0.0



		ExtStand	472	455	96.4	16	3.4
	Math	Items	233	232	99.6	1	0.4
		ExtStand	296	296	100.0	0	0.0
	Science	Items	119	119	100.0	0	0.0
		ExtStand	177	175	98.9	0	0.0
SI							
	ELA	Items	45	26	57.8	17	37.8
		ExtStand	90	87	96.7	1	1.1
	Math	Items	45	31	68.9	3	6.7
		ExtStand	84	76	90.5	5	6.0
	Science	Items	51	49	96.1	0	0.0
		ExtStand	134	127	94.8	3	2.2
P							
	ELA	Items	30	12	40.0	18	60.0
		ExtStand	70	66	94.3	1	1.4
	Math	Items	30	15	50.0	5	16.7
		ExtStand	49	38	77.6	11	22.4
	Science	Items	45	45	100.0	0	0.0
		ExtStand	100	87	87.0	2	2.0

### Recommendations

It is recommended that the state review the nonacademic items and extended standards that were rated non-foundational and revise to strength the match to academic content.

**Criterion 2:** The content is referenced to the student's assigned grade level (based on chronological age).

## Functional Independence

Results for FI ELA are reported at the domain level, whereas the math and science results are reported at the strand level. Since almost all of the FI ELA items were designed to align to the reading strand, a finer-grain reporting provides more information about the distribution of items nested in the reading domains. For math and science, most items were distributed across all of the content strands.

## ELA

All the ELA and math FI extended standards were referenced to one grade level below the current grade level of the student because Michigan administers the grades 3-8 assessments in early fall. The following table reports the number of items that the state intended to have aligned to the ELA domains (the 3<sup>rd</sup> grade AA-AAS column is referenced to the 2<sup>nd</sup> grade content standards). The ELA domains remain constant for grades 2-8. Almost all of the items were aligned to the ELA reading domains of word study, narrative text, informational text, and comprehension.

*Table 18: Intended Alignment of FI ELA Items by Domain*

ELA Domain	3rd	4th	5th	6th	7th	8 <sup>th</sup>	11 <sup>th</sup>
1 Word Study			20	20	20	20	20
2 Narrative Text	21	28	8	3	3	2	5
3 Informational Text		4	5	3	3	4	4
4 Comprehension	21	9	8	15	15	15	12
5 Metacognition							
6 Critical Standards							
7 Reading Attitude							
8 Writing Genres	1	1	1	1	1	1	1
9 Writing Process							
10 Personal Style							
11 Grammar and Usage							
12 Spelling							
13 Handwriting							
14 Writing Attitude							
15 Speaking							
16 Spoken discourse							
17 Listening & Viewing							
18 Response							

*Note.* The 3<sup>rd</sup> – 8<sup>th</sup> grade items were referenced to a lower grade extended standards due to the assessments being administered in early fall. For example, the 3<sup>rd</sup> grade items were referenced to the 2<sup>nd</sup> grade extended standards.

The following table contains the number of FI extended standards that the state designed to have alignment to the ELA domains. All ELA domains had at least one extended standards except for the domain of *writing attitude*.

*Table 19: Intended Alignment of FI ELA Extended Standards by Domain*

	ELA Domain	2 <sup>nd</sup>	3rd	4th	5th	6th	7th	8 <sup>th</sup>	11
1	Word Study	12	7	7	7	7	7	7	7
2	Narrative Text	4	2	3	4	4	4	4	3
3	Informational Text	4	3	3	3	3	3	3	1
4	Comprehension	9	4	4	4	4	4	4	2
5	Metacognition	15	2	2	2	2	2	2	2
6	Critical Standards	2	1	1	1	1	1	1	1
7	Reading Attitude	1	1	1	1				2
8	Writing Genres	5	4	3	4	3	3	3	7
9	Writing Process	10	6	5	5	4	5	5	5
10	Personal Style	1	1	1	1	1	1	1	1
11	Grammar and Usage	1	1	1	1	1	1	1	1
12	Spelling	1	1	1	1		1	1	1
13	Handwriting	1	1	1	1	1	1	1	1
14	Writing Attitude								
15	Speaking	7	4	4	5	2	2	2	3
16	Spoken discourse	4	3	4	4	4	4	4	4
17	Listening & Viewing	6	4	2		1	1	1	3
18	Response	3	5	5	5	4	4	4	4
19	Fluency	3							

## **Math**

The following table reports the number of FI items that the state intended to have aligned to the Math strands (the 2<sup>nd</sup> grade column is the 3<sup>rd</sup> grade AA-AAS given at the beginning of the academic year). In middle and high school grades, most items were intended to be aligned to *numbers and operations* and *measurement*. There were some items referenced to the math strands of *geometry* and *data analysis*. The 11<sup>th</sup> grade AA-AAS items were mostly aligned to *geometry and measurement* and *number sense and measurement*.

*Table 20: Intended Alignment of FI Math Items by Strand*

Strands	3rd	4th	5th	6th	7th	8 <sup>th</sup>	11 <sup>th</sup>
Number & Operations	10	16	16	18	19	17	
Measurement	8	8	10	13	11	12	
Geometry	9	4	2	1	2	1	
Data analysis	3	2	2	3	3	3	1
Algebra						2	
Patterns and relations	N/A	N/A	N/A	N/A	N/A	N/A	4
Geometry and measurement	N/A	N/A	N/A	N/A	N/A	N/A	17
Number sense and measurement	N/A	N/A	N/A	N/A	N/A	N/A	15
Numerical and algebraic operations	N/A	N/A	N/A	N/A	N/A	N/A	3

The intended alignment of the FI extended standards to grade level standards was not provided. The following table lists the number of extended standards by the strand.

*Table 21: Intended Alignment of FI Math Extended Standards by Strand*

Strands	3rd	4th	5th	6th	7th	8 <sup>th</sup>	11 <sup>th</sup>
Number & Operations	5	17	16	15	16	25	
Measurement	3	9	10	12	12	15	
Geometry	4	4	2	2	3	3	
Data analysis	1	3	3	3	4	4	8
Algebra						2	
Patterns and relations	N/A	N/A	N/A	N/A	N/A	N/A	3
Geometry and measurement	N/A	N/A	N/A	N/A	N/A	N/A	20
Number sense and measurement	N/A	N/A	N/A	N/A	N/A	N/A	21
Numerical and algebraic operations	N/A	N/A	N/A	N/A	N/A	N/A	3

*Note.* The intended grade level domain was not provided by the state.

## ***Science***

The following table indicates number of FI science items that were referenced to the science strands. While all the strands had some items, most items were intended to assess the strands of *life science*, *physical science*, and *earth science*.

*Table 22: Intended Alignment of FI Science Items by Standards*

Science Strands	5th	8th	11th
Constructing New Scientific Knowledge	2	2	2
Reflecting on Scientific Knowledge	2	2	2
Using Life Science	12	14	14
Using Physical Science Knowledge	12	14	15
Using Earth Science Knowledge	6	8	12

The following table indicates number of FI extended standards that were referenced to the science strands. As with the science items, while all the strands had some extended standards, most extended standards were intended to be aligned to the grade level domains of *life science*, *physical science*, and *earth science*.

*Table 23: Intended Alignment of FI Science Extended Standards by Standards*

Science Strands	5th	8th	11th
Constructing New Scientific Knowledge	6	6	6
Reflecting on Scientific Knowledge	5	5	7
Using Life Science	12	17	18
Using Physical Science Knowledge	15	17	16
Using Earth Science Knowledge	14	17	16

## Supported Independence

### ELA

The following table indicates the intended alignment of the MI-Access SI AA-AAS items to the grade band ELA domains. In elementary and middle school, the intended alignment is to the domains of *word study*, *speaking*, *spoken discourse*, and *listening/viewing*.

*Table 24: Intended Alignment of SI ELA Items by Domain*

	ELA Domain	3 <sup>rd</sup> -5 <sup>th</sup> <i>N</i>	6 <sup>th</sup> – 8 <sup>th</sup> <i>N</i>	High School Domains	11 <sup>th</sup> <i>N</i>
1	Word Study	3	4	Writing, Speaking,& Expressing	5
2	Narrative Text	1	2	Reading, Listening, & Viewing	10
3	Informational Text			Literature and the Culture	
4	Comprehension			Language	
5	Metacognition				
6	Critical Standards				
7	Reading Attitude				
8	Writing Genres				
9	Writing Process	1	2		
10	Personal Style				
11	Grammar and Usage				
12	Spelling				
13	Handwriting				
14	Writing Attitude				
15	Speaking	4	4		
16	Spoken discourse	4	2		
17	Listening & Viewing	2	1		
18	Response				

The following table indicates the intended alignment of the ELA SI extended standards to the grade band ELA domains. Almost all ELA domains had at least one extended standard.

*Table 25: Intended Alignment of SI ELA Extended Standards by Domain*

	ELA Domain	3 <sup>rd</sup> -5 <sup>th</sup> <i>N</i>	6 <sup>th</sup> – 8 <sup>th</sup> <i>N</i>	High School Domains	11 <sup>th</sup> <i>N</i>
1	Word Study	6	6	Writing, Speaking,& Expressing	14
2	Narrative Text	2	4	Reading, Listening, & Viewing	21
3	Informational Text	3	3	Literature and the Culture	7
4	Comprehension	4	3	Language	2
5	Metacognition	2	2		
6	Critical Standards	1	1		
7	Reading Attitude	1	1		
8	Writing Genres	3	4		
9	Writing Process	2	3		
10	Personal Style	1	1		
11	Grammar and Usage	1	1		
12	Spelling		1		

13	Handwriting	1	1
14	Writing Attitude		1
15	Speaking	3	3
16	Spoken discourse	3	3
17	Listening & Viewing	1	1
18	Response	2	2

## Math

The following table indicates the intended alignment of the SI math AA-AAS items to the grade band math strands. All math strands had at least 2 items that were intentionally aligned.

*Table 26: Number of SI Math Items for the Strands of Math*

Elementary	<i>N</i>	Middle & High	Middle <i>N</i>	High <i>N</i>
Number & Operations	4	Number & Operations	4	4
Data analysis	2	Data analysis	3	2
Measurement	5	Algebra	2	2
Geometry	4	Measurement	4	5
		Geometry	2	2

The following table indicates the intended alignment of the math SI extended standards to the grade band math strands. All math strands had at least 1 extended standard that was intentionally aligned.

*Table 27: Number of SI Math Extended Standards for the Strands of Math*

Elementary	<i>N</i>	Middle & High	Middle <i>N</i>	High <i>N</i>
Number & Operations	8	Number & Operations	9	9
Data analysis	4	Data analysis	7	7
Measurement	6	Algebra	1	1
Geometry	4	Measurement	9	9
		Geometry	4	4

## Science

The following table indicates the intended alignment of the MI-Access science SI AA-AAS items to the grade band science strands. All science strands had at least one item.

*Table 28: Number of SI Science Items for the Standards*

Science Standards	5th	8th	11th
Constructing New Scientific Knowledge	1	1	1
Reflecting on Scientific Knowledge	1	1	1
Using Life Science	7	7	7
Using Physical Science Knowledge	3	3	3
Using Earth Science Knowledge	5	5	5

The following table indicates the intended alignment of the SI science extended standards to the grade band science strands. All science strands had at least nine extended standards.

*Table 29: Number of SI Science Extended Standard for the Grade Level Standards*

Science Standards	5th	8th	11th
Constructing New Scientific Knowledge	11	11	11
Reflecting on Scientific Knowledge	9	11	11
Using Life Science	22	27	28
Using Physical Science Knowledge	27	29	28
Using Earth Science Knowledge	26	31	29

## Participation

### ELA

The following table indicates the intended alignment of the MI-Access Participation AA-AAS items to the grade band ELA domains. In elementary and middle school, the intended alignment is to the domains of *word study*, *speaking*, *spoken discourse*, *listening/viewing*, and *response*.

*Table 30: Intended Alignment of P ELA Items by Domain*

ELA Domain	3 <sup>rd</sup> -5 <sup>th</sup> <i>N</i>	6 <sup>th</sup> – 8 <sup>th</sup> <i>N</i>	High School Domains	11 <sup>th</sup> <i>N</i>
1 Word Study	3	1	Writing, Speaking,& Expressing	5
2 Narrative Text	1	1	Reading, Listening, & Viewing	5
3 Informational Text			Literature and the Culture	
4 Comprehension			Language	
5 Metacognition				
6 Critical Standards				
7 Reading Attitude				
8 Writing Genres				
9 Writing Process				
10 Personal Style				
11 Grammar and Usage				
12 Spelling				
13 Handwriting				
14 Writing Attitude				
15 Speaking	3	4		
16 Spoken discourse	1	1		
17 Listening & Viewing	1	2		

18	Response	1	1
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The following table indicates the intended alignment of the Participation extended standards to the grade band ELA domains. In elementary and middle school, the intended alignment of the extended standards is to all ELA domains except *grammar and usage* and *spelling*. All the high school domains have at least one extended standard.

*Table 31: Intended Alignment of P ELA Extended Standards by Domain*

	ELA Domain	3 <sup>rd</sup> -5 <sup>th</sup> <i>N</i>	6 <sup>th</sup> - 8 <sup>th</sup> <i>N</i>	High School Domains	11 <sup>th</sup> <i>N</i>
1	Word Study	5	5	Writing, Speaking,& Expressing	10
2	Narrative Text	3	3	Reading, Listening, & Viewing	17
3	Informational Text	3	3	Literature and the Culture	7
4	Comprehension	4	4	Language	1
5	Metacognition	1	1		
6	Critical Standards	1	1		
7	Reading Attitude	1	1		
8	Writing Genres	3	3		
9	Writing Process	2	2		
10	Personal Style	1	1		
11	Grammar and Usage				
12	Spelling				
13	Handwriting	1	1		
14	Writing Attitude	1	1		
15	Speaking	3	3		
16	Spoken discourse	3	3		
17	Listening & Viewing	2	2		
18	Response	1	1		

## **Math**

The following table indicates the intended alignment of the math AA items to the grade band strands of math.

*Table 32: Intended Alignment of P Math Items by Strand*

Elementary	<i>N</i>	Middle & High	Middle <i>N</i>	High <i>N</i>
Number & Operations	3	Number & Operations	3	3
Data analysis	2	Data analysis	2	2
Measurement	2	Algebra		
Geometry	3	Measurement	3	2
		Geometry	3	3

The following table indicates the intended alignment of the P math extended standards to the grade band math strands. All math strands had at least one extended standard that was intentionally aligned.



*Table 33: Number of P Math Extended Standards for the Strands of Math*

Elementary	<i>N</i>	Middle & High	Middle <i>N</i>	High <i>N</i>
Number & Operations	5	Number & Operations	6	6
Data analysis	3	Data analysis	3	4
Measurement	5	Algebra		
Geometry	2	Measurement	5	7
		Geometry	4	4

## Science

The following table indicates the intended alignment of the MI-Access Participation Science AA-AAS items to the grade band strands of science.

*Table 34: Intended Alignment of P Science Items by Standards*

Science Standards	5th	8th	11th
Constructing New Scientific Knowledge	1	1	1
Reflecting on Scientific Knowledge	1	1	1
Using Life Science	5	5	5
Using Physical Science Knowledge	5	5	5
Using Earth Science Knowledge	3	3	3

The following table indicates the intended alignment of the Participation science extended standards to the grade band science strands. All science strands had at least four extended standards.

*Table 35: Number of P Science Extended Standard for the Grade Level Standards*

Science Standards	5th	8th	11th
Constructing New Scientific Knowledge	4	4	4
Reflecting on Scientific Knowledge	3	4	4
Using Life Science	7	7	7
Using Physical Science Knowledge	10	11	10
Using Earth Science Knowledge	8	5	8

## Summary and Recommendations

For the Functional Independence ELA and math AA, all items were referenced to a previous grade levels extended standards. For example, the 3<sup>rd</sup> grade AA-AAS items were referenced to the 2<sup>nd</sup> grade extended standards. All the extended standards were referenced to the appropriate grade level standard. The Functional Independence science AA items were aligned to the appropriate extended standards. The Supported Independence and Participation AA items were referenced to grade band extended standards. The extended standards were referenced to grade level standards.

*Recommendations*

It is recommended that the state align the FI ELA and math items to the students' assigned grade level content standards or provide a rationale for aligning to earlier grade level content standards. Furthermore, the FI math extended standards should be referenced to the grade level content standards.

**Criterion 3:** The focus of achievement maintains fidelity with the content of the original grade level standards (content centrality) and when possible, the specified performance

Content experts rate content centrality on a three-point scale measuring the degree of alignment (none, far, near) between the AA-AAS items and the extended standards and the extended standards to the grade level content standards. Performance centrality concerns the level of expected performance of the standards. Ratings are made on a 3-point scale (none, some, all). For example, an alternate content standard of “identify” would have some of the same performance as “analyze and identify.” Content experts reviewed the items and extended standards that were rated as none for content centrality and determine whether the ratings were due to an overstretched skill, a mismatch to the standard, or a backfitting skill. Items that are rated as nonacademic are excluded from this analysis. Since the FI math extended standards were not referenced to the grade level content standards, content and performance centrality were not rated.

## Functional Independence

### *ELA*

#### *Items*

A total of 288 (97.6%) of 295 MI-Access FI ELA AA-AAS items were rated as having a near content centrality when compared to the extended standards. Three items were rated as a far and four items were rated as having no content centrality link. The reason for the items not linking to the extended standards was due to a standard mismatch. A list of the FI ELA items with no content centrality is reported below. The performance centrality results were identical to the content centrality; that is, 288 (97.6%) items had all of the performance level found in the extended standards.

*Table 36: FI ELA Items with Rating of No Content Centrality*

Grade	Question #	Item #
6	26	10475003
6	47	10479001
7	26	10475003
8	26	10475003

#### *Extended Standard*

Of the 456 FI extended standards, 359 (78.7%) were rated as having a near content centrality, 56 (12.3%) rated as far and 37 (8.1%) rated no content centrality. Four extended standards did reference a grade level content standard and was not evaluated for content or performance centrality. The most common reason for the rating of no content centrality was mismatch to grade level standard ( $n=31$ , 86%) and 5 (13.9%) extended standards were overstretched. A list of the extended standards that were rated as having no content centrality is reported in the following table. For performance centrality 271 (60.6%) extended standards were

rated as having all the performance expectations found in the grade level standards, 142 (31.8%) were rate as having some, and 33 (7.4%) were rated as having none.

*Table 37: FI ELA Extended Standards with Rating of No Content Centrality*

Grade	Extended Standard	Reason
2	Begin to recognize identified grades K-1 high frequency words and sight words.	Mismatch
2	Know the meanings of a few words encountered frequently in grades K-1 reading and oral language contexts.	Mismatch
2	Begin to become familiar with classic and contemporary literature recognized for quality and literary merit; reflecting our common heritage as well as cultures from around the world.	Overstretch
2	Utilize grade appropriate resources including a word wall; a class developed checklist.	Mismatch
3	Know the meanings of words encountered frequently in grades K-1 reading and oral language contexts.	Mismatch
3	Become familiar with and respond thoughtfully to quality and culturally diverse literature.	Overstretch
3	Identify simple story elements, such as problem, setting (time and place), events, characters, sense of story events (beginning, middle, and end), theme and lesson.	Mismatch
4	Identify simple story elements, such as problem, setting (time and place), events, characters, sense of story events (beginning, middle, and end), theme and lesson.	Mismatch
3	Begin to use grammatical structures, including singular and plural nouns, contractions, singular possessive pronouns (my/mine, his/hers, etc.), conjunctions, and inflected endings (-s, -es, -ing, etc.).	Mismatch
3	Briefly tell/retell about familiar experiences (including at least characters, setting, and events); interests (including at least topic and key details).	Overstretch
4	Write an informational piece that addresses a focus question (e.g., What is a family?) using descriptive, enumerative, sequence patterns, that may include headings, titles, labels, photographs, or illustrations to enhance the understanding of central ideas.	Mismatch
4	Give, restate, and follow two-step directions.	Mismatch
6	Write several connected sentences with grade level appropriate grammar, usage, mechanics, and temporary spellings that reflect a close approximation of the sequence of sounds in the word.	Overstretch
6	Identify and use subjects and verbs that are in agreement; past, verb tenses; nouns and possessives; commas in a series; and begin use of quotations marks and capitalization in dialogue.	Mismatch
6	Express time relationships using correct verb tenses.	Mismatch
6	Respond to questions asked of them, providing an appropriate level of detail.	Mismatch
6	Listen to or view and discuss a variety of genres and compare their responses to those of their peers.	Mismatch
6	Retell what a speaker said, paraphrasing and explaining the gist or main idea; then extend by connecting and relating personal experiences.	Mismatch
6	Combine skills to reveal strengthening literacy (e.g., viewing then analyzing orally, listening then summarizing orally).	Mismatch
7	Express time relationships using correct verb tenses.	Mismatch
7	Respond to questions asked of them, providing an appropriate level of detail.	Overstretch
7	Listen to or view and discuss a variety of genres and compare their responses to those of their peers.	Mismatch
7	Retell what a speaker said, paraphrasing and explaining the gist or main idea; then extend by connecting and relating personal experiences.	Mismatch
7	Combine skills to reveal strengthening literacy (e.g., viewing then analyzing orally, listening then summarizing orally).	Mismatch
8	Express time relationships using correct verb tenses.	Mismatch
8	Respond to questions asked of them, providing an appropriate level of detail.	Mismatch
8	Listen to or view and discuss a variety of genres and compare their responses to those of their peers.	Mismatch
8	Combine skills to reveal strengthening literacy (e.g., viewing then analyzing orally, listening	Mismatch

	then summarizing orally).	
8	Demonstrate awareness that speakers use persuasive and propaganda techniques which often convey false and misleading information.	Mismatch
11	Analyze characters' thoughts and motivation through dialogue, various character roles and functions (e.g., hero, villain, narrator), point of view, and conflict/resolution.	Mismatch
11	Identify and describe informational text patterns, such as: compare/contrast/ position/support; problem/solution.	Mismatch
11	Identify authors' purposes, and begin to explain how authors use appendices, headings, subheadings, marginal notes, keys and legends, figures, and bibliographies to enhance understanding of supporting and key ideas.	Mismatch
11	Retell and summarize the main ideas and relevant details of grade level appropriate narrative, informational, and functional text.	Mismatch
11	Apply significant knowledge from what is read in grade level science, social studies, and mathematics texts.	Mismatch
11	Make presentations or reports in standard American English if it is their first language (students whose first language is not English will present their work in their developing version of standard American English.)	Mismatch
11	Respond to questions asked of them, providing appropriate elaboration and details.	Mismatch
11	Listen to or view in a variety of genres and compare their responses to those of their peers.	Mismatch

## ***Math***

### *Items*

Of the 232 FI math items, 184 (79.3%) were rated as having a near content centrality, 47 (20.3%) rated far, and 1 (<1%) rated no content centrality (mismatch, 11<sup>th</sup> grade, question #15, item#90018027). The same results were found for performance centrality—only one item had none of the performance expectations found in the extended standards.

### *Extended Standards*

There was no intended link of the FI extended standards to the grade level standard at the time of the study. Therefore, content and performance centrality could not be evaluated.

## ***Science***

### *Items*

Of the 118 FI science items, 73 (61.9%) were rated near and 34 (28.8%) rated far. Eleven items (9.3%) were rated as having no content centrality. The reasons for the lack of content centrality was mismatch to the extended standard ( $n=9$ ) or backmapping to the standard ( $n=2$ ). A list of the science items rate no content centrality is reported in the following table.

*Table 38: FI Science Items with Rating of No Content Centrality*

Grade	Question #	Item #	Reason
5	5	33389	Backmapping
8	42	33278	Backmapping
8	43	33286	Mismatch
8	45	33288	Mismatch
8	48	33616	Mismatch
11	29	33461	Mismatch
11	33	33646	Mismatch
11	34	33656	Mismatch
11	35	33657	Mismatch
11	41	33597	Mismatch
11	44	33600	Mismatch

*Extended Standards*

Of the 177 FI extended standards, 114 (64.4%) were rated as having a near content centrality, 35 (19.8.0%) rated far, and 6 (3.4%) rated as having no content link to the standards. Twenty-two extended standards (12.6%) did not reference a grade level content standard. The items rated no link for content centrality are reported in the following table. For performance centrality, 28 (32.8%) were rated all, 87 (49.7%) rated some, and 8 (4.6%) were rated as having none of the same performance found in the grade level standard.

*Table 39: FI Science Extended Standards with Rating of No Content Centrality*

Grade	Extended Standard	Reason
Middle	Identify and/or use weather information about water from a variety of sources, such as weather reports from television, radio, and newspapers, and relate them to daily activities.	Overstretch
High	Identify and explain appropriate safety precautions during severe weather.	Mismatch
High	Demonstrate a basic and general awareness about the motion of the earth around the sun, the earth on its axis, and the moon around the earth.	Overstretch
Middle	Identify which simple machine is best used in a given situation.	Overstretch
High	Identify when length, weight, area, volume, or temperature is appropriate to describe the properties of an object or substance.	Mismatch
High	Identify/state safety rules/precautions related to common household appliances that use electric motors.	Mismatch

**Supported Independence***ELA**Items*

Of the 26 SI ELA items, 25 (96.2%) were rated near content centrality, 1 (3.8%) item rated far, and 0 (0%) were rated as having no content centrality. For performance centrality, 20 (76.9%) items were rated near, 6 (23.1%) items far, and 0 items were rated as having none of the performance expectations that were found in the extended standards.

### Extended Standards

Of the 87 total SI extended standards, 49 (56.3%) were rated as near, 28 (32.2%) rated far, and 10 (11.5%) rated as having none of the content found in the extended standards. The reason of the lack of content centrality was mismatch ( $n=6$ ) or overstretch ( $n=4$ ). The extended standards with no content centrality are reported in the following table. For performance centrality, 28 (32.2%) were rated all, 49 (56.3%) rated some, and 10 (11.5%) extended standards were rated none.

*Table 40: SI ELA Extended Standards with Rating of No Content Centrality*

Grade	Extended Standard	Reason
Elementary	Identify simple story elements in narrative text, (e.g., characters, setting, story sequence).	Mismatch
Elementary	Identify what makes the stories they are reading fiction vs. fact and why an author makes that choice.	Mismatch
Elementary	Write an informational piece using symbols, pictures, and/or print, (e.g., labeling a project, class assignment, sharing a presentation).	Mismatch
Elementary	Identify an audience for an age appropriate story or drawing, (e.g., people who like stories about animals, children, etc.).	Overstretch
Elementary	Write own name and personally meaningful words using semi-phonetic spelling to represent text, (e.g., labeling a picture, assigning a message to symbols).	Overstretch
Elementary	Accurately copy personal information and frequently encountered words, (e.g. first/last name, safety words, address).	Overstretch
Elementary	Understand and follow one and two-step directions.	Mismatch
Middle	Identify that stories have universal themes, (e.g., friendship, bravery, fairness) within and across texts.	Mismatch
Middle	Identify an audience and purpose for an age appropriate story or drawing, (e.g., audience - people who like stories about animals, children; purpose – to entertain, provide information, etc.).	Overstretch
Middle	Understand and follow complex directions (more than two-steps).	Mismatch
High	Write upper and lower case letters, own name, and personal information legibly.	Mismatch
High	Be enthusiastic about writing and learning how to write (e.g., selecting a variety of age appropriate words and information to write).	Mismatch
High	Identify whether a story is fiction or fact and explain how that relates to the author's purpose (entertain vs. inform).	Mismatch
High	Recognize frequently encountered and personally meaningful words paired with pictures and/or objects and explain meaning when appropriate (e.g., first and last name, family member names, address, phone number, clothing labels, academic [subjects, supplies], functional words/symbols in daily living text [e.g., stop, men, women, exit, walk, poison, danger, directions, phone books, names on buses]).	Mismatch
High	Know the meaning of frequently encountered content-area words paired with pictures and/or objects (e.g., science, mathematics, social studies, electives).	Mismatch
High	Understand and follow increasingly complex directions (more than three-steps).	Mismatch
High	Recognize and/or demonstrate the understanding of vocabulary paired with pictures and/or objects associated with specific vocations/jobs (e.g., teacher, doctor, restaurant worker).	Mismatch
High	Use processes to construct and/or convey meaning (e.g., creating lists, using familiar resources, working with a pattern, using a story map, web, venn-diagram, other graphic organizers).	Mismatch
High	Apply information from content area texts to other situations to demonstrate understanding (e.g., presentations, reports, summaries).	Mismatch

## Math

### Items

Of the 31 SI math items, 27 (87.1%) were rated near, 2 (6.5%) rated far, and 2 (6.5%; items # 52161 and 52108) had no content centrality. The reason for the lack of content centrality was a mismatch to the extended standard. For performance centrality, 27 (87.1%) items had all, 2 (6.5%) had some, and 2 (6.5%) had none of the same performance expectations found in the extended standards.

### Extended Standards

Of the 76 SI extended standards, 9 (11.8%) were near, 51 (67.1%) was far, and 16 (21.1%) was rated as having no content centrality. The reason for the lack of content centrality was a mismatch to the grade level standard ( $n=10$ ) or overstretch ( $n=6$ ). The extended standards with no content centrality are reported in the following table. The performance centrality had the same trend found in the content centrality: that is, 9 (11.8%) were all, 51 (67.1%) was some, and 16 (21.1%) was rated as none for performance centrality.

*Table 41: SI Math Extended Standards with Rating of No Content Centrality*

Grade	Extended Standard	Reason
Elementary	Identify which of two objects is heavier or longer.	Overstretch
Elementary	Match a designated coin to another of the same denomination presented within a group.	Overstretch
Elementary	Demonstrate knowledge of the routes involved in moving around the school (bathroom, gym, cafeteria, bus stop, etc).	Mismatch
Middle	Identify and/or use the appropriate measuring device to measure the length or weight of an object in whole units (pounds or inches).	Overstretch
Middle	Demonstrate knowledge of the routes involved in moving around the school (bathroom, gym, cafeteria, bus stop, etc).	Mismatch
High	Count up to 100 using whole numbers.	Mismatch
High	Fill in missing numbers on a number line. Number line limited to starting at 1 and ending at 10, with 3 missing numbers.	Mismatch
High	Select appropriate numbers in order to solve problems. Limited to no more than 50.	Mismatch
High	Use a calendar to locate significant dates.	Overstretch
High	Compare approximate temperatures in order to solve problems.	Mismatch
High	Identify and/or use the appropriate tool for different types of measurement.	Mismatch
High	Identify different coins and bills (\$1, \$5, \$10, and \$20), and/or use bills for purchases.	Mismatch
High	Count out a specified amount of money up to \$20 using \$1 \$5, and/ or \$10 bills.	Overstretch
High	Determine if they have enough money for a purchase up to \$20.	Overstretch
High	Demonstrate knowledge of the routes involved in moving around the school (bathroom, gym, cafeteria, bus stop, etc).	Mismatch
High	Use maps to find locations. Understand and use directions such as north, south, east, and west and directional terms such as left, right, forward, and back.	Mismatch



## Science

### Items

Of the 49 SI science items, 37 (75.5%) were rated near, 8 (16.3%) rate far, and 4 (8.2%; items # 22362, 22381, 22429, & 22490) rated no content centrality. The reason for the lack of content centrality for all items was a mismatch to the extended standard. For performance centrality, 37 (75.5%) were rated all, 8 (16.3%) rate some, and 4 (8.2%; items # 22362, 22381, 22429, & 22490) rated none for performance centrality.

### Extended Standards

Of the 127 SI science extended standards, 33 (26.0%) were rated near, 56 (44.1%) rated far, 20 (15.7%) rate no content centrality. Eighteen extended standards (14.2%) did not reference the grade level content standards. The reason for the lack of content centrality was mismatch ( $n=10$ ) or overstretching ( $n=10$ ). The extended standards with no content centrality are reported in the following table. For performance centrality, 6 (4.7%) extended standard were all, 77 (60.6%) some, and 26 (20.5%) had none of the same performance expectations found in the grade level content standards.

*Table 42: SI Science Extended Standards with Rating of No Content Centrality*

Grade	Extended Standard	Reason
Middle	Identify safety precautions associated with water flowing downhill.	Mismatch
Middle	Identify and/or use weather information about water from a variety of sources, such as weather reports from television, radio, and newspapers, and relate them to daily activities.	Overstretch
High	Identify safety precautions associated with water flowing downhill.	Mismatch
High	Identify and/or explain appropriate safety precautions during severe weather.	Mismatch
High	Explain differences between day and night in the winter and summer in terms of the relative orientation of the earth and sun.	Overstretch
High	Explain charts and graphs used to summarize data.	Overstretch
Elementary	Identify some common healthy foods.	Mismatch
Middle	Discriminate between living and non-living things.	Overstretch
Middle	Sort several foods into two groups.	Mismatch
High	Sort food into six food groups.	Mismatch
Elementary	Identify refraction in common activities.	Mismatch
Middle	Identify simple machines used to change effort.	Overstretch
Middle	Identify light sources.	Overstretch
High	Identify when weight, length, and temperature are appropriate to describe an object.	Overstretch
High	Identify materials (solids and liquids) that when mixed together form a new product (mixture/solution).	Overstretch
High	Identify useful electrical circuits.	Overstretch
High	Identify and/or use instructions and appropriate safety precautions with devices that use electric motors.	Overstretch
High	Identify simple machines used to change effort.	Mismatch

## Participation

### ELA

#### Items

All 12 P ELA items had a near content centrality. Eleven out of the 12 item had all of the performance expectations found in the extended standards, with one item having some performance centrality.

#### Extended Standards

Of the 65 P extended standards, 30 (46.2%) were rated near, 23 (35.4%) rated far, and 12 (18.5%) rated none for content centrality. The reasons for the ratings of no content centrality was overstretching ( $n=7$ ) or mismatch ( $n=5$ ). The extended standards with no content centrality are reported in the following table. For performance centrality, 14 (21.5%) were all, 39 (60.0%) were some, and 12 (18.5%) were rated as having none of the performance expectations found in the grade level standard.

*Table 43: P ELA Extended Standards with Rating of No Content Centrality*

Grade	Extended Standard	Reason
Elementary	Understand basic concepts of text messages, e.g., — appropriate page turning or visual attendance to the need for page turning; — one-to-one correspondence between word read and word printed on the page.	Overstretch
Elementary	Answer simple questions (who, what, where) related to simple story elements in narrative text, (e.g., characters, setting).	Mismatch
Elementary	Contribute to class list or graphic organizer in preparation for a class activity, (e.g., a descriptive list about a school project or event).	Overstretch
Elementary	Generate own name and simple labels to demonstrate ownership and convey meaning, (e.g., labeling a picture, assigning a message to a picture).	Overstretch
Elementary	Use forms of early writing, (e.g., scribbling, drawing, making letter-like marks).	Overstretch
Elementary	Introduce self to familiar and unfamiliar people using verbalizations, symbols/pictures and/or assistive technology devices.	Overstretch
Elementary	Follow one and two-step directions.	Mismatch
Middle	Understand basic concepts of text messages, e.g., directionality; differences between letters and words, words and sentences.	Overstretch
Middle	Answer simple questions regarding an increasing variety of basic informational text, (e.g., awareness of daily schedule, calendars, dictionary, phone directories).	Overstretch
Middle	Demonstrate understanding that stories have universal themes, (e.g., friendship, bravery, fairness) within and across texts.	Mismatch
Middle	Generate own name and personally meaningful words to demonstrate ownership and convey meaning, (e.g., labeling a picture, assigning a message to pictures to tell a story).	Overstretch
Middle	Answer questions related to familiar routines and experiences, (e.g., instructional routines).	Mismatch
High	Use forms of early writing with demonstrated purpose (e.g., scribbling, drawing, making letter-like marks to represent name).	Mismatch
High	Recognize frequently encountered and personally meaningful words paired with pictures and/or objects in daily contexts (e.g., stop signs, restroom, danger, pedestrian crossing).	Mismatch
High	Identify frequently encountered words paired with pictures and/or objects associated	Mismatch

	with familiar environments, contexts, and vocations (e.g., school, home, doctor/dentist office, restaurants, and vocations such as assembly, laundry, sorting).	
High	Engage in and maintain focus on conversations in a variety of settings (e.g., classroom, transitions, community).	Mismatch
High	Answer questions related to assigned tasks (e.g., instructional tasks).	Mismatch
High	Use processes to construct and/or convey meaning (e.g., creating lists, using familiar communication systems).	Mismatch
High	Identify key ideas using words, picture, and/or symbols from content area text (e.g., main ideas from science and social studies lessons).	Mismatch
High	Identify informational/functional text (e.g., magazines, personal correspondence, textbooks, reference texts, and internet/websites).	Overstretch

## Math

### Items

Of the 15 P math items, 14 (93.3%) were rated near and 1 (6.7%; item # 72171) was rated as no content centrality due to mismatch. For performance centrality, 14 items (93.3%) were rated as all and 1 (6.7%) was rated as none of the performance expectations found in the extended standards.

### Extended Standards

Of the 38 P math extended standards, 27 (71.1%) were rated near and 11 (28.9%) rated none for content centrality. The reasons for the ratings of no content centrality was overstretching ( $n=7$ ) or mismatch ( $n=4$ ). The extended standards with no content centrality are reported in the following table. For performance centrality, 27 (71.1%) were some and 11 (28.9%) were rated as having none of the performance expectations found in the grade level standard.

*Table 44: P Math Extended Standards with Rating of No Content Centrality*

Grade	Extended Standard	Reason
Elementary	Compare size between two like objects (which is bigger or smaller).	Overstretch
Elementary	Distinguish a coin from another similar object.	Overstretch
Elementary	Demonstrate finding targeted areas/objects.	Mismatch
Middle	Compare size between two like objects (which is bigger or smaller).	Overstretch
Middle	Distinguish a coin from another similar object.	Overstretch
Middle	Demonstrate finding targeted areas/objects.	Mismatch
High	Discriminate the number 1 from another object or symbol.	Mismatch
High	Associate value with the number 1.	Mismatch
High	Compare size between two like objects (which is bigger or smaller).	Overstretch
High	Distinguish a coin from another similar object.	Overstretch
High	Recognize coins or bills as money.	Overstretch
High	Follow a procedure using pre-counted money to pay for real life things.	Overstretch
High	Demonstrate understanding of terms describing relative position (e.g., between, in, out, inside, outside).	Overstretch
High	Demonstrate finding targeted areas/objects.	Mismatch

## ***Science***

### ***Items***

Of the 45 P science items, 35 (77.8%) were near, 7 (15.6%) far, and 3 (6.7%); items # 11112, 11208, & 11414) had no link to the extended standards. The reason for the lack of content centrality was mismatch ( $n=2$ ) or overstretching ( $n=1$ ). For performance centrality, 35 (77.8%) had all, 7 (15.6%) had some, and 3 (6.7%) had none of the same performance expectations found in the extended standards.

### ***Extended Standards***

Of the 87 P extended standards, 18 (20.7%) had near, 40 (46.0%) far, and 16 (18.4%) were rated as having no content centrality. Thirteen extended standards were not referenced to the grade level content standards. The reason for the lack of content centrality was mismatch to the grade level standard ( $n=9$ ) or overstretch ( $n=7$ ). For performance centrality, 6 (6.9%) had all, 50 (57.5%) had some, and 18 (20.7%) had none of the performance expectations found in the grade level content standard.

## **Summary and Recommendations**

The following table summarizes the item and extended standards level results for the MI-Access FI, SI, and P alternate assessments. The bolded numbers indicate the percentage of items and extended standards that were rated as having a near or far for content centrality. **For the FI AA-AAS, a high percentage of items (ranging from 90% to 99%) and extended standards (ranging from 87% to 95%) were rated near or far for content centrality.** ELA and math items and extended standards for the SI and P AA tended to have a lower percentage rate for content centrality when compared to the FI AA-AAS. A surprising finding was that the SI and P science AA items tended to have as high a percentage *near* and *far* ratings for content centrality as found in the FI AA items.

Table 45: Summaries of the Item and Extended Standards Results for the FI, SI, and P Alternate Assessments

<b>ELA</b>	Functional Independence		Supported Independence		Participation	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<b>Items (N)</b>	295		45		30	
Academic	295	100.0	26	57.8	12	40.0
Foundational	0	0.0	17	37.8	12	40.0
Content Centrality	291	<b>98.6</b>	26	<b>57.8</b>	12	<b>40.0</b>
<b>Extended Standards (N)</b>	472		90		70	
Academic	455	96.4	87	96.7	66	94.3
Foundational	16	3.4	1	1.1	4	5.7
Content Centrality	411	<b>87.1</b>	77	<b>85.6</b>	54	<b>77.1</b>

  

<b>Math</b>	Functional Independence		Supported Independence		Participation	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<b>Items (N)</b>	233		45		30	
Academic	232	99.6	31	68.9	15	50.0
Foundational	1	0.4	3	6.7	5	16.7
Content Centrality	221	<b>94.8</b>	29	<b>64.4</b>	14	<b>46.7</b>
<b>Extended Standards (N)</b>	296		84		49	
Academic	296	100.0	76	90.5	38	77.6
Foundational	0	0.0	5	6.0	11	22.4
Content Centrality	NA	NA	60	<b>71.4</b>	27	<b>55.1</b>

  

<b>Science</b>	Functional Independence		Supported Independence		Participation	
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>
<b>Items (N)</b>	119		51		45	
Academic	119	100.0	49	96.1	45	100.0
Foundational	0	0.0	0	0.0	0	0.0
Content Centrality	107	<b>89.9</b>	45	<b>88.2</b>	42	<b>93.3</b>
<b>Extended Standards (N)</b>	177		134		100	
Academic	175	98.9	127	94.8	87	87.0
Foundational	0	0.0	3	2.2	2	2.0
Content Centrality	169	<b>95.5</b>	89	<b>66.4</b>	71	<b>71.0</b>

It is suggested that the state review and revise the AA-AAS items and extended standards that were rated *none* for content centrality to strengthen the alignment to grade level content standards.

**Criterion 4:** The content differs from grade level in range, balance, and DOK, but matches high expectations set for students with significant cognitive disabilities

Alignment indices for criterion 4 are based on Webb’s alignment method (Webb, 1997). The following analyses include only extended standards and AA-AAS items that were rated academic and had a content centrality rating of near or far. Four alignment indices are calculated: (a) categorical concurrence, (b) depth of knowledge, (c) range-of-knowledge, and (d) balance of representation. Below is a short description.

*Categorical concurrence* is the consistency of categories of content in the standards and assessments. The criterion of categorical concurrence between standards and assessment is met if the same or consistent categories of content appear in both the assessment and the standards. For example, if a content standard (or stand) is *measurement* in mathematics, the evaluative decision is “Does the assessment have items that target *measurement*?” It is possible for an assessment item to align to more than one content standard. For example, if an assessment item requires students to calculate surface area, which is aligned to the content standard of *measurement*, to successfully answer the question the student needs to be able to multiply numbers, which is aligned to the content standard of *operations*. In this case the item is aligned to both content standards.

*Depth of knowledge* (DOK) examines the consistency between the cognitive demands of the standards and cognitive demands of assessments (Webb, 1997). Important aspects of learning go beyond academic topics and include students’ organization of knowledge, problem representations, use of strategies, and self-monitoring skills (Glaser, Linn, & Bohrnstedt, 1997). Completely aligned standards and assessments requires an assessment system designed to measure in some way the full range of cognitive complexity within each specified content standard. Rated on a 6-point scale (see Appendix A), DOK<sup>1</sup> provides a measure of performance complexity required to perform the skill listed in the standard or item. DOK ratings are guided by a list of verbs (e.g., identify, state) that reflect the response that would be required of the student. Experts consider the verb in conjunction with the content when determining DOK.

*Range-of-knowledge* correspondence criterion examines the alignment of assessment items to the multiple objectives within the content standards. Range-of-knowledge correspondence is used to judge whether a comparable span of knowledge expected of students by a standard is the same as, or corresponds to, the span of knowledge that students need in order to correctly answer assessment items. The range-of-knowledge numeric value is the percentage of content standards with at least 50% of the objectives having one or more hits. For example, if there are five objectives (e.g., length, area, volume, telling time, and mass) included in the content standard of measurement, a

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<sup>1</sup> There are many scales for determining DOK levels. The one provided in this manual is just one of many rating scales available.

minimum expectation is at least one assessment item is related to at least three of the objectives. According to Webb (1997), 40-50% of the objectives for a standard could be considered weakly met.

The *balance of representation* criterion is used to indicate the extent to which items are evenly distributed across the content standards and the objectives under the content standards. In our measurement content standard with five objectives, we would expect items would be evenly distributed across the five objectives. In practice educational agencies may place greater emphasis on specific objectives and content standards. In this case the assumption of an even distribution would be replaced with the expected proportion, or emphasis, as specified by the educational agency. The formula used to compute the balance of representation index is the following

$$Balance = 1 - (\sum_{i=1}^k | \frac{1}{O} - \frac{I_k}{H} |)/2,$$

where  $O$  is the total number of objectives hit (i.e., item has been judged to be aligned) for the content standard,  $I_k$  is the number of items hit corresponding to objective  $k$ , and  $H$  is the total number of items hit for the content standard. The balance index can range from 0 (indicating unbalanced representation) to 1.0 (indicating balance representation) with values from .6 to .7 considered a weak acceptable balance and values .7 or greater considered acceptable.

## Functional Independence

### *ELA Results*

#### *Categorical Concurrence*

The following table indicates the number of ELA items that were rated as academic and had a content centrality of near or far. Under the strand (domains 1-7) of reading, two of the domains, *word study* and *comprehension*, have the most items. For the strand of writing (domains 8-14), *writing genres* has one item that is aligned. For the strand of speaking and listening/viewing, no items were aligned.

*Table 46: Number of FI ELA Items (academic and near or far content centrality) for ELA Domains*

	ELA Domain	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
Reading	1 Word Study	20	22	22	22	22	22	24
	2 Narrative Text		6	6				1
	3 Informational Text		4	5	2	3	3	4
	4 Comprehension	21	9	8	15	15	15	12
	5 Metacognition							
	6 Critical Standards							
	7 Reading Attitude							
Writing	8 Writing Genres	1	1	1	1	1	1	1
	9 Writing Process							
	10 Personal Style							
	11 Grammar and Usage							
	12 Spelling							
	13 Handwriting							
	14 Writing Attitude							
Listening	15 Speaking							
	16 Spoken discourse							
	17 Listening & Viewing							
	18 Response							

The following table indicates the proportion of domains that have at least one item that is aligned. The ELA strands of *writing* and *speaking and listening/viewing* are underrepresented for the functional independence AA-AAS, which was the intention of the state. For reading, some of the domains were not represented on the AA-AAS, *metacognition*, *critical standards*, and *reading attitude*. Again, this was the intended design of the state.

*Table 47: FI Categorical Concurrence—Proportion of Domains within a Standards with At Least One Item*

ELA Domain	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
Reading	.29	.57	.57	.43	.43	.43	.57
Writing	.14	.14	.14	.14	.14	.14	.14
Speaking & Listening/viewing	.00	.00	.00	.00	.00	.00	.00

### *ELA Depth of Knowledge*

The level of depth of knowledge required for responding to the AA-AAS items and the extended standards are reported in the following tables. Most of the items were rated at the performance and comprehension levels. A few items were rated at the highest DOK level. For the extended standards, most standards were rated in the higher DOK levels.



*Table 48: Depth of Knowledge of FI ELA AA-AAS Items*

DOK Levels	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
Attention							
Memorize/Recall	20						
Performance		20	20	19	20	20	20
Comprehension	21	21	22	20	21	21	20
Application							
Analysis/Synthesis/ Evaluation	1	1		3	1	1	2

*Table 49: Depth of Knowledge of FI ELA Extended Standards*

DOK Levels	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
Attention							
Memorize/Recall	2	2	1				
Performance	8	12	8	6	4	8	4
Comprehension	13	12	18	15	16	15	12
Application	21	16	15	18	20	16	21
Analysis/Synthesis/ Evaluation	11	9	11	10	10	10	19

The following table reports the number of AA-AAS items below, at, or above the extended standard DOK level. According to Webb, at least 50% of the items should be at or above the DOK level found in the standards. All grade levels met this benchmark.

*Table 50: Number of FI ELA AA Items Below, At, or Above the Extended Standard DOK Level*

Grade	Below	At	Above
All	13.9	62.0	24.1
3 <sup>rd</sup>	16.3	83.7	
4 <sup>th</sup>	11.9	35.7	52.4
5 <sup>th</sup>	14.3	35.7	50.0
6 <sup>th</sup>	14.3	26.2	59.5
7 <sup>th</sup>	16.9	78.6	4.8
8 <sup>th</sup>	19.0	81.0	
11 <sup>th</sup>	4.8	92.9	2.4

### *Range of Knowledge*

The range of knowledge refers to the breadth or span of knowledge required by the AA-AAS items to the extended standards. The range of knowledge index is the percentage of domains that have at least 50% of the content expectations with at least one item aligned. The range of knowledge results can be found in the following table. Because there were no items found in some of the domains, the values are lower than expected.

*Table 51: Range of Knowledge for FI Reading across All Grades*

Grade	Range	Domains with 50% Coverage
3 <sup>rd</sup>	14%	4
4 <sup>th</sup>	43%	2, 3, 4
5 <sup>th</sup>	43%	2, 3, 4
6 <sup>th</sup>	29%	3, 4
7 <sup>th</sup>	29%	3, 4
8 <sup>th</sup>	29%	3, 4
11 <sup>th</sup>	29%	3, 4

*ELA Balance of Representation*

The balance indices of the AA-AAS items indicate the extent to which items are evenly distributed across the strands. Webb indicates that values above .70 are acceptable. The balance indices for the domain of reading are reported in the table below. All the values met an acceptable level except for 11<sup>th</sup> grade. The balance of representation indices were not calculated for the strands of *writing* and *speaking and listening/viewing* because of the lack of AA-AAS items.

*Table 52: FI ELA Balance of Representation for the Domains of Reading*

Grade	Reading
3 <sup>rd</sup>	1.0
4 <sup>th</sup>	.71
5 <sup>th</sup>	.71
6 <sup>th</sup>	.72
7 <sup>th</sup>	.74
8 <sup>th</sup>	.74
11 <sup>th</sup>	.62

**Math***Categorical Concurrence*

The following table indicates the number of math items that were rated as academic and had a content centrality of near or far.

*Table 53: FI Number of Math Items (academic and near or far content centrality) for Math Domains*

Strands	3rd	4th	5th	6th	7th	8 <sup>th</sup>	11 <sup>th</sup>
Number & Operations	8	16	16	18	19	17	
Measurement	7	8	10	13	11	12	
Geometry	9	4	2	1	2	1	
Data analysis	3	2	2	3	3	3	1
Algebra							
Patterns and relations	N/A	N/A	N/A	N/A	N/A	N/A	4
Geometry and measurement	N/A	N/A	N/A	N/A	N/A	N/A	16
Number sense and measurement	N/A	N/A	N/A	N/A	N/A	N/A	15
Numerical and algebraic operations	N/A	N/A	N/A	N/A	N/A	N/A	3

The following table indicates the proportion of domains that have at least one item and proportion of domains that have six or more items that are aligned (based on Webb's recommendation based on adequate reliability indices). The state had at least one item in each strand of math for all grades except 11<sup>th</sup> grade (lacking an item in the domain of *algebra*). Between 50% to 75% of the math strands had at least six items.

*Table 54: FI Categorical Concurrence—Proportion of Domains within a Standards with At Least One Item and More than Six Items*

Math Domain	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
At Least One Item	1.0	1.0	1.0	1.0	1.0	1.0	.83
6 Items or more	.75	.50	.50	.50	.50	.50	.66

### *Math Depth of Knowledge*

The level of depth of knowledge required for responding to the AA-AAS items and the extended standards are reported in the following tables. Most of the items were rated at the performance and comprehension levels. A few items were rated at the highest DOK. For the extended standards, most standards were rated in the higher DOK levels. As noted in the summary, this is an unusual finding and suggests that the extended standards in FI Math may be closer to grade level than alternate achievement.

*Table 55: Depth of Knowledge of FI Math AA-AAS Items*

DOK Levels	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
Attention							
Memorize/Recall	7	3	1	4	2	4	1
Performance	6	7	6	8	7	5	7
Comprehension	2	2	3		3	4	6
Application		9	11	13	17	16	15
Analysis/Synthesis/ Evaluation	12	9	9	10	6	6	10

*Table 56: Depth of Knowledge of FI Math Extended Standards*

DOK Levels	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
Attention							
Memorize/Recall	2	1			1	1	1
Performance	1	6	9	6	5	5	8
Comprehension	2	6	5	5	6	7	8
Application	3	12	9	10	13	21	18
Analysis/Synthesis/ Evaluation	5	8	8	11	10	15	20

The following table reports the number of AA-AAS items below, at, or above the extended standard DOK level. According to Webb, at least 50% of the items should be at or above the DOK level found in the standards. All grade levels met this benchmark.

*Table 57: Number of FI Math AA-AAS Items Below, At, or Above the Extended Standard DOK Level*

Grade	Below	At	Above
All	27	61	12
3 <sup>rd</sup>	37	55	7
4 <sup>th</sup>	20	60	20
5 <sup>th</sup>	27	57	17
6 <sup>th</sup>	29	51	20
7 <sup>th</sup>	31	63	6
8 <sup>th</sup>	24	68	9
11 <sup>th</sup>	24	74	3

### *Range of Knowledge*

The range of knowledge could not be calculated because of the lack of reference to grade level objectives that were nested within the domains of math.

### *Math Balance of Representation*

The balance indices of the math AA items by grade level are reported in the following table. Using Webb's criteria, only 3<sup>rd</sup> and 4<sup>th</sup> grade had an acceptable level.

*Table 58: FI Math Balance of Representation*

Grade	Math
3 <sup>rd</sup>	.86
4 <sup>th</sup>	.70
5 <sup>th</sup>	.59
6 <sup>th</sup>	.61
7 <sup>th</sup>	.64
8 <sup>th</sup>	.57
11 <sup>th</sup>	.63

## Science

The science strands and number of items aligned to each strand are presented in the following table. There was at least two items in each stand.

*Table 59: Number of FI Science Items Alignment to Standards*

Science Standards	5th	8th	11th
Constructing New Scientific Knowledge	2	2	2
Reflecting on Scientific Knowledge	2	1	2
Using Life Science	11	14	14
Using Physical Science Knowledge	12	13	14
Using Earth Science Knowledge	6	5	7

The following table indicates the proportion of domains that have at least one item and proportion of domains that have six or more items that are aligned (based on Webb's recommendation based on adequate reliability indices). The state had at least one item in each strand of science for all grades. From 40% to 60% of the science strands had at least six items.

*Table 60: FI Science Categorical Concurrence—Proportion of Domains within a Standards with At Least One Item and More than Six Items*

Math Domain	5 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
At Least One Item	1.0	1.0	1.0
6 Items or more	.60	.40	.40

### *Depth of Knowledge*

The level of depth of knowledge required for responding to the AA-AAS items and the extended standards are reported in the following tables. Most of the items were rated at the performance and comprehension levels. A few items were rated at the highest DOK. For the extended standards, most standards were rated in the higher DOK levels.

*Table 61: FI Depth of Knowledge of Science AA-AAS Items*

DOK Levels	5 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
Attention			
Memorize/Recall	9	11	8
Performance			
Comprehension	7	14	28
Application	15	13	9
Analysis/Synthesis/ Evaluation	3	1	

*Table 62: Depth of Knowledge of FI Science Extended Standards*

DOK Levels	5 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
Attention			
Memorize/Recall	32	24	23
Performance	3		1
Comprehension	6	21	25
Application	6	7	5
Analysis/Synthesis/ Evaluation	5	8	9

The following table reports the number of AA-AAS items below, at, or above the extended standard DOK level. According to Webb, at least 50% of the items should be at or above the DOK level found in the standards. All grade levels met this benchmark.

*Table 63: Number of FI Science AA-AAS Items Below, At, or Above the Extended Standard DOK Level*

Grade	Below	At	Above
All	15	45	39
5 <sup>th</sup>	12	35	53
8 <sup>th</sup>	16	53	32
11 <sup>th</sup>	18	47	36

### *Range of Knowledge*

All the science strands had at least 50% of the standards with at least one item that was aligned.

### *Balance of Representation*

The balance indices of the science AA-AAS items are reported in the following. Webb indicates that values above .70 are acceptable. The 5<sup>th</sup> grade science assessment met the acceptable level for balance.

*Table 64: FI Science Balance of Representation*

Grade	Math
5 <sup>th</sup>	.70
8 <sup>th</sup>	.62
11 <sup>th</sup>	.68

## Supported Independence

Because there were so few AA-AAS items on the SI AA, Webb's align statistics were not calculated. The following tables describe the distribution of items across the academic domains and the depth of knowledge levels.

### ELA

The following table reported the number of items that were aligned to the ELA domains.

*Table 65: Alignment of SI ELA Items by Domain*

	ELA Domain	Elem <i>N</i>	Middle <i>N</i>	High School Domains	<i>N</i>
1	Word Study	3	4	Writing, Speaking, & Expressing	3
2	Narrative Text	1	2	Reading, Listening, & Viewing	7
3	Informational Text			Literature and the Culture	
4	Comprehension			Language	
5	Metacognition				
6	Critical Standards				
7	Reading Attitude				
8	Writing Genres				
9	Writing Process	1	2		
10	Personal Style				
11	Grammar and Usage				
12	Spelling				
13	Handwriting				
14	Writing Attitude				
15	Speaking		1		
16	Spoken discourse	1	1		
17	Listening & Viewing				
18	Response				

The level of depth of knowledge required for responding to the AA-AAS items is reported in the following tables. Items are distributed across all levels of depth of level except for the lowest (attention) and highest (analysis/synthesis/evaluation).

*Table 66: Depth of Knowledge of SI ELA AA-AAS Items*

DOK Levels	Elementary	Middle	High
Attention			
Memorize/Recall	2	4	2
Performance	3	4	6
Comprehension		1	1
Application	1	1	1
Analysis/Synthesis/ Evaluation			

## Math

The following table indicates the number of math items that were rated as academic and had a content centrality of near or far. Almost all math strands had at least one item that was rated as being aligned.

*Table 67: Number of SI Math Items (academic and near or far content centrality) for Math Strands*

Elementary		Middle & High	Middle	High
Number & Operations	4	Number & Operations	4	4
Data analysis	1	Data analysis	1	2
Measurement	2	Algebra		1
Geometry	1	Measurement	4	2
		Geometry	1	2

The items depth of knowledge ratings are reported in the following table. The item depth of knowledge ratings were distributed across the *performance*, *comprehension*, and *application*.

*Table 68: Depth of Knowledge of SI Math AA-AAS Items*

DOK Levels	Elementary	Middle	High
Attention			
Memorize/Recall			
Performance	5	5	9
Comprehension	1	2	
Application	2	4	2
Analysis/Synthesis/ Evaluation		1	

## Science

The following table indicates the number of science items that were rated as academic and had a content centrality of near or far. Almost all science strands had at least one item that was rated as being aligned.

*Table 69: Alignment of SI Science Items by Standard*

Science Standards	5th	8th	11th
Constructing New Scientific Knowledge	1	1	1
Reflecting on Scientific Knowledge	1	1	
Using Life Science	7	7	7
Using Physical Science Knowledge	2	2	3
Using Earth Science Knowledge	5	3	4

The items depth of knowledge ratings are reported in the following table. The item depth of knowledge ratings were distributed across the *memorize/recall*, *comprehension*, and *application*.



*Table 70: Depth of Knowledge of SI Science AA-AAS Items*

DOK Levels	5 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
Attention			
Memorize/Recall	11	7	9
Performance			
Comprehension	4	5	2
Application	1	2	4
Analysis/Synthesis/ Evaluation			

## Participation

### ELA

The following tables indicate the number of items that was aligned to the ELA strand and the depth of knowledge of the items.

*Table 71: Alignment of P ELA AA-AAS Items by Domain*

	ELA Domain	Elem	Middle	High School Domains	N
1	Word Study	3	1	Writing, Speaking, & Expressing	
2	Narrative Text	1	1	Reading, Listening, & Viewing	3
3	Informational Text			Literature and the Culture	
4	Comprehension			Language	
5	Metacognition				
6	Critical Standards				
7	Reading Attitude				
8	Writing Genres				
9	Writing Process				
10	Personal Style				
11	Grammar and Usage				
12	Spelling				
13	Handwriting				
14	Writing Attitude				
15	Speaking				
16	Spoken discourse		1		
17	Listening & Viewing	1			
18	Response		1		

*Table 72: Depth of Knowledge of P ELA AA-AAS Items*

DOK Levels	Elementary	Middle	High
Attention			
Memorize/Recall	3		
Performance	1	2	2
Comprehension	1	2	1
Application			
Analysis/Synthesis/ Evaluation			

## Math

The following tables indicate the number of items that was aligned to the math strand and the depth of knowledge of the items.

*Table 73: Number of P Math Items (academic and near or far content centrality) for Math Strands*

Elementary		Middle & High	Middle	High
Number & Operations	2	Number & Operations	3	2
Data analysis		Data analysis		1
Measurement	1	Algebra		
Geometry	1	Measurement	1	1
		Geometry	1	1

*Table 74: Depth of Knowledge of P Math AA-AAS Items*

DOK Levels	Elementary	Middle	High
Attention			
Memorize/Recall	3	2	2
Performance		1	1
Comprehension			1
Application		1	
Analysis/Synthesis/ Evaluation	1	1	1

## Science

The following tables indicate the number of items that was aligned to the science strand and the depth of knowledge of the items.

*Table 75: Number of P Science Items for Science Standards*

Science Standards	5th	8th	11th
Constructing New Scientific Knowledge	1	1	
Reflecting on Scientific Knowledge	1		1
Using Life Science	4	5	5
Using Physical Science Knowledge	5	5	5
Using Earth Science Knowledge	3	3	3

*Table 76: Depth of Knowledge of P Science AA-AAS Items*

DOK Levels	5 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>
Attention	2		
Memorize/Recall	8	2	11
Performance	1	1	1
Comprehension	3	1	1
Application			1
Analysis/Synthesis/ Evaluation			

## Summary and Recommendations

### *FI Results*

**ELA Results:** Almost all the items were aligned to the reading strand with no items aligned to the reading domains of *metacognition*, *critical standards*, and *reading attitude*. The strand of *writing* only had one item that was aligned and *listening/viewing* had no items aligned. This resulted in a low value for categorical concurrence but this was in agreement with the intended alignment as designed by the state. The distribution of the ELA items and extended standards across the levels of depth of knowledge suggested that students are expected to demonstrate knowledge and skills at the higher depth of knowledge levels. The depth of knowledge of the extended standards and items were in agreement and met an acceptable level of agreement as recommended by Webb. The values found for range of knowledge indicate that many of the domains of reading were underrepresented but the balance indices indicate that items were evenly distributed across the intended strands.

**Math Results:** Most of the math strands had at least one item that was aligned to the domain. The depth of knowledge level found in the items and extended standards were remarkable, with most items and standards rated at the higher levels of depth of knowledge. This distribution is unusual for alternate assessments.

**Science Results:** All of the science strands had at least one item that was aligned to the strand. As with the math, the science depth of knowledge levels were remarkable—most items were aligned to the depth of knowledge levels of *comprehension* and *application*. The depth of knowledge levels found in the extended standards was similar as those levels found in the AA-AAS items. All the science strands had at least 50% of the standards with at least one aligned item and the balance of representation was at or slightly below an acceptable level.

### *SI and P Results*

Because there were few AA-AAS items, the indices for categorical concurrence, depth of knowledge, balance of representation, and range of knowledge were not calculated for SI and P AA-AASs. Instead, a description of what academic strands that are represented on the *SI* and *P* AA-AASs and a description of the depth of knowledge were provided.

**ELA Results:** For ELA, both the SI and P AA-AASs covered very few of the 18 ELA domains that were found in the standards and the depth of knowledge levels were often rated at the *memorize/recall* and *performance* levels. There were some items at the *comprehension* and *application* levels.

**Math Results:** AA-AAS items were distributed across all the math strands. The item depth of knowledge ratings were distributed across the *performance*, *comprehension*, and *application*.

Science Results: AA-AAS items were distributed across all the science strands. The item depth of knowledge ratings were distributed across the *memorize/recall*, *comprehension*, and *application*.

### *Recommendation*

The state should provide a rationale for the narrowing of the reading categories and a lack of items in the strands of *writing* and *speaking and listening/viewing*.

**Criterion 5:** There is some differentiation in content across grade levels.

One way to examine the change in content across the grade levels demonstrated in the alternate assessment items is to use Webb's (2005) definitions for change across content. Those definitions are:

- (a) *broadier*—higher-grade standards or items reflect broader application of target skill or knowledge;
- (b) *deeper*—higher-grade standards or items reflect deeper mastery of the target skill or knowledge;
- (c) *prerequisite*—lower-grade standards or items reflects a different by prerequisite skill for mastery of the higher grade standard;
- (d) *new*—the higher-grade has a new skill or knowledge unrelated to skills or knowledge covered at prior grades; and
- (e) *identical*—higher-grade standards or items appear identical to one of the lower-grade standards.

Content experts were trained using these definitions and examples to review the AA-AAS items. Each strand within each content area was then rated using the definitions and a rating system (not evident-0%, limited- 25%, partial-50%, and clear- 75%) with experts noting information of particular interest and examples.

## Results

### ***ELA***

#### *Extended Standards*

In English Language Arts, some differentiation for grade levels was found for all three formats (FI, SI, and P). Overall, the FI extended standards reflected more differentiation than the SI or P extended standards. In contrast, there were several areas with high redundancy as shown in the following table. For example, for writing genres in the FI standards, attempting to write simple poems remains the same from grade 2-5. Writing an informational piece addresses the features from grades 5-8. For the SI and P standards many times there was only one standard for each strand and several times this one standard was the same for elementary and middle school bands (e.g., critical standards, reading attitude, grammar and usage). Some redundancy may be desirable in creating extended standards and even mirror redundancy in the general standards, but either this rationale for redundancies should be provided or more differentiation should be planned.

*ELA Extended Standards: Strands with a Clear or Partial\* Differentiation Rating*

<b>Differentiation</b>	<b>ELA- FI</b>	<b>ELA- SI</b>	<b>ELA- P</b>
Broader	-Informational Text (e.g., progression from simple how to books to many types of genres) -Grammar & Usage (but progression is by grade band, not grade level) -Spelling -Response	-Narrative Text -Comprehension* -Writing Process* -Spoken Discourse*	-Listening Conventions*
Deeper	-Word Study -Informational Text -Critical Standards -Writing Process (especially from middle grades to grade 11) -Personal Style -Grammar & Usage -Spelling -Response (e.g., significant difference between responding and complex writing/reading)	-Narrative Text (e.g., story elements) -Comprehension* -Informational Text* -Writing Process* -Spoken Discourse -Listening Conventions	-Fluency* -Narrative Text*
Prerequisite	-Word Study -Informational Text -Grammar & Usage -Spelling -Response	-Narrative Text* -Comprehension* -Writing Process* -Spoken Discourse*	-Listening Conventions*
New	-Informational Text -Grammar & Usage -Spelling -Response	-Narrative Text* -Comprehension* -Writing Process* -Spoken Discourse*	-Listening Conventions*

*ELA Extended Standards: Strands Lacking Differentiation (Redundancies)*

<b>Differentiation</b>	<b>ELA- FI</b>	<b>ELA- SI</b>	<b>ELA- P</b>
Identical	-Comprehension -Metacognition (e.g., no progression indicated from grade 2) -Reading Attitude -Writing Genres -Writing Process -Personal Style -Handwriting (as expected) -Writing Attitude -Speaking Conventions (e.g., same standards from grades 2-8) -Listening & Viewing (e.g., following directions, asking appropriate questions)	-Word Study -Fluency* -Informational Text* -Metacognition -Critical Standards -Reading Attitude -Writing Genres -Personal Style -Grammar & Usage -Spelling -Handwriting (as expected) -Writing Attitude -Speaking Conventions* -Response	-Word Study -Fluency* -Narrative Text* -Informational Text* -Comprehension* -Metacognition -Critical Standards -Reading Attitude -Writing Genres -Writing Process* -Personal Style -Handwriting (as expected) -Writing Attitude -Speaking Conventions -Spoken Discourse -Response

*ELA Items*

Overall the FI format in ELA had many examples of grade level differentiation and only a few areas of redundancy. In contrast, the SI and P alternate assessments have substantial redundancy in items across grade levels. Some planning of new or additional AA-AAS items may be needed to continue to stretch the content expectations for students as they progress across years.

*ELA AA-AAS Items*

<b>Indicator</b>	<b>Differentiation-broader, deeper, new or used prerequisites at lower grades</b>	<b>Lack of Differentiation-identical items occur</b>	<b>Examples of redundant items or points of interest</b>	<b>Overall</b>
FI: Writing	Clear evidence of deeper applications: partial evidence of prerequisite; limited evidence of new; no evidence of broader knowledge/skills.	Partial redundancy	Most of the elementary (i.e., grades 4 and 5) and all the middle school (i.e., grades 6, 7, and 8) were given the same writing prompt at each grade band.	Needs Improvement-a focus on different prompts with different genre or content expectations may be appropriate.
FI:	Partial evidence	Partial	As the same pattern	Needs

Comprehension	of broader and deeper applications, prerequisite, and new knowledge/skills.	redundancy.	occurred within the grade bands (same items for grades 4 and 5 and same items for grades 6, 7, and 8), there was evidence of redundant items.	Improvement- as the standards are written by grade level, the items should follow suit to limit the number of repeating items.
FI: Word Study	Clear evidence of broader and deeper applications, prerequisite, and new knowledge/skills.	Partial redundancy.	The expectation in the items move from pictures to simple sentences to more complex sentences. The grade banding is still evident.	Adequate Differentiation.
Supported Independence	Limited evidence of broader, deeper, prerequisite, and new knowledge/skills.	Substantial redundancy.	Experts noted very little change in items from elementary to high school for writing, the use of language to communicate, and story elements.	Needs Improvement with a continued focus on reducing number of repeating items across grade bands.
Participation	No evidence of broader, deeper, prerequisite, or new knowledge/skills.	Substantial redundancy.	Only one question on the high school assessment was indicated as addressing different content: “focus on interactive discussion.”	Needs improvement with a continued focus on reducing number of repeating items across grade bands.



## Math

### Extended Standards

Similar to ELA, the extended standards for math show some grade differentiation across all formats with the clearest differentiation for the FI format. Number sense and Numbers & Operations were rated as having the most differentiation of all the strands across the three assessments. For the Participation extended standards, no algebra standards were included so there was no rating for that strand. The strands showing identical standards (lack of differentiation) are areas for future planning by either providing a rationale for this redundancy or by developing more differentiation. For example, for SI standards, Data & Probability have five repeating standards out of six from middle to high school and have four repeating standards with only the quantity changed (e.g., 2 steps instead of 3) out of four from elementary to middle school. For the P standards, three out of three reoccurring standards (there is a fourth standard only for high school) repeat across the three grade bands.

#### *Math Extended Standards: Strands with a Clear or Partial\* Differentiation Rating*

Differentiation	Math- FI	Math- SI	Math- P
Broader	-Number Sense* -Data Analysis* (e.g., reading data from 1 scale to increasing scales and sets of data)	-Measurement* -Data & Probability* -Numbers & Operations (e.g., single digit to multiple digits calculations)	-Numbers & Operations* (e.g., values to counting or ordinal terms)
Deeper	-Measurement* (e.g., counting blocks, using tools, selecting tools, estimation) -Number Sense* -Data Analysis	-Measurement* -Numbers & Operations*	
Prerequisite	-Number Sense* (Place value & computation; counting and ordering & comparisons)	-Data & Probability* -Numbers & Operations*	
New	-Data Analysis*		

#### *Math Extended Standards: Strands That Do Not Show Clear Differentiation*

Differentiation	Math- FI	Math- SI	Math- P
Identical	-Measurement (e.g., equivalent sets of coins & bills) -Geometry -Number sense*	-Measurement* (4 out of 9 standards the same across grade level bands) -Algebra (only 1 standard) -Data & Probability -Numbers & Operations*	-Measurement (4 out of 5 standards the same across grade bands) -Geometry -Data & Probability -Numbers & Operations

### Items

Overall, the grade level differentiation for the FI format was adequate. Some attention to redundancies is recommended in future revisions of the assessment. For example, on the FI assessment, which number comes next in the pattern is asked through grade 11 and the complexity of these numbers varies very little. The Supported Independent assessment needs development of some new or additional items in math to improve differentiation. For example, in the SI the students sort by two attributes from elementary to high school. This level of redundancy may be desirable, but additional increasing expectations should also be reflected. The Participation assessment needs more academic items in math as well as attention to differentiation of these items.

### Math AA-AAS items

<b>Strand</b>	<b>Differentiation-broader, deeper, new or used prerequisites at lower grades</b>	<b>Lack of Differentiation-identical items occur</b>	<b>Examples of redundant items or points of interest</b>	<b>Overall</b>
FI: Algebra	Limited evidence of broader applications and new knowledge/skills. No evidence of deeper applications or prerequisite skills.	Only limited redundancy.	Experts noted that this strand was not really addressed until 8th grade.	Adequate. Rating is based on upper level items. Consideration should be given to whether elementary and middle school level items are needed in this area (e.g., prerequisites.)
FI: Geometry	Partial evidence of new knowledge/skills. Limited evidence of broader and deeper applications and prerequisite skills.	Substantial redundancy.	Experts noted that proportional terms are included across the grades and identifying two dimensional shapes are included through the elementary grades.	Needs Improvement to reduce redundancies.
FI: Data Analysis and	Partial evidence of broader	Partial redundancy.	Experts also noted that almost	Adequate; while has some

Probability	applications of knowledge/skills. Limited evidence of deeper applications, prerequisite, and new skills.		all used reading graphs in the same manner. Missing content identified by the experts was constructing tables, graphs, charts from given data; describing the shape of data; comparing 2 sets of data.	evidence of differentiation could be “fine tuned” to minimize repeating items.
FI: Numbers & Operations	Deeper applications and prerequisite skills were identified as having evidence of a partial relationship. Broader applications and new skills had limited evidence.	Partial redundancy.	The experts noted that the same question was being asked 4 or 5 times at each grade level using different data.	Adequate; some “fine tuning” might be merited
FI: Measurement	Clear evidence of broader and deeper applications. Partial evidence of prerequisite knowledge/skills. Limited evidence of new skills.	Partial redundancy.	Every grade level addressed the value of money in almost the same manner.	Adequate
Supported Independence	Clear evidence of deeper applications for Numbers & Operations only. Partial evidence of broader applications for Numbers & Operations and Geometry and of	Clear evidence for Measurement, Geometry, Algebra, and Data Analysis and Probability. Partial evidence for Numbers & Operations.	Experts noted that most of the Algebra and Data Analysis items were redundant. Several items in Numbers & Operations could be matched across the grade bands.	Needs Improvement to address a variety of knowledge/skills across the grade bands.

	deeper applications for Measurement.			
Participation		Four of the five items in Numbers & Operations were found to be very similar. The same question in Measurement was found across all three grade bands. One of the three academic items in Geometry was found to repeat from elementary to middle grades.	As 14 of the 30 items were identified as non academic, limited information about differentiation could be gleaned from this assessment. No Algebra or Data Analysis and Probability items were academic.	Should be reviewed again once more academic items are included in the assessment.

## Science

### Extended Standards

In Science, there is overall differentiation for grade levels for the FI and SI levels, but not for P. All of the P extended benchmarks in science had no clear differentiation. For all strands Atmosphere and Weather was the most problematic strand for differentiation. Additional planning to differentiate the extended benchmarks in science for the P level is recommended.

### *Science Extended Standards: Strands with a Clear or Partial\* Differentiation Rating*

Differentiation	Science- FI	Science- SI	Science- P
Broader	-ES: Geosphere* -ES: Hydrosphere -ES: Solar System* -LS: Cells* -LS: Organ of Living Things -LS: Heredity -LS: Evolution -LS: Ecosystems -PS: Waves & Vibrations -PS: Motion of Objects	-ES: Hydrosphere -ES: Solar System* -Constructing New* -LS: Organization of Living Things*	
Deeper	-ES: Geosphere* -ES: Hydrosphere -ES: Solar System* -LS: Cells*	-ES: Hydrosphere -ES: Solar System* -Constructing New*	

	<ul style="list-style-type: none"> <li>-LS: Organ of Living Things</li> <li>-LS: Heredity</li> <li>-LS: Evolution</li> <li>-LS: Ecosystems</li> <li>-PS: Waves &amp; Vibrations</li> <li>-PS: Motion of Objects</li> </ul>		
Prerequisite	<ul style="list-style-type: none"> <li>-ES: Geosphere</li> <li>-ES: Hydrosphere</li> <li>-ES: Solar System*</li> <li>-LS: Cells*</li> <li>-LS: Organ of Living Things</li> <li>-LS: Heredity</li> <li>-LS: Evolution</li> <li>-LS: Ecosystems</li> <li>-PS: Waves &amp; Vibrations</li> <li>-PS: Motion of Objects</li> </ul>	<ul style="list-style-type: none"> <li>-ES: Hydrosphere</li> <li>-ES: Solar System*</li> <li>-Constructing New*</li> </ul>	
New	<ul style="list-style-type: none"> <li>-ES: Geosphere*</li> <li>-ES: Hydrosphere*</li> <li>-ES: Solar System*</li> <li>-LS: Cells*</li> <li>-LS: Organ of Living Things</li> <li>-LS: Heredity</li> <li>-LS: Evolution</li> <li>-LS: Ecosystems</li> <li>-PS: Waves &amp; Vibrations</li> <li>-PS: Motion of Objects</li> </ul>	<ul style="list-style-type: none"> <li>-ES: Hydrosphere*</li> <li>-ES: Solar System*</li> <li>-Constructing New*</li> </ul>	

*Science Extended Standards: Strands that Do Not Show Clear Differentiation*

Differentiation	Science- FI	Science- SI	Science- P
Identical	<ul style="list-style-type: none"> <li>-ES: Atmosphere and Weather</li> </ul>	<ul style="list-style-type: none"> <li>-ES: Atmosphere and Weather</li> <li>-LS: Heredity</li> <li>-LS: Evolution</li> <li>-PS: Changes in Matter</li> </ul>	<ul style="list-style-type: none"> <li>-ES: Atmosphere and Weather</li> <li>-ES: Solar System</li> <li>-LS: Organ of Living Things</li> <li>-LS: Heredity</li> <li>-Reflecting on Science</li> <li>-PS: Changes in Matter</li> </ul>

*Items*

Science presents the strongest differentiation across the three content areas. All three assessments include fewer repeating items than the other content areas with the Functional Independence assessment serving as a model for grade level differentiation. SI is also adequate. While P needs improvement, it did have some limited evidence for differentiation as well.

*Science AA-AAS items*

<b>Strand</b>	<b>Differentiation-broader, deeper, new or used prerequisites at lower grades</b>	<b>Lack of Differentiation-identical items occur</b>	<b>Examples of redundant items or points of interest</b>	<b>Overall</b>
FI: Constructing New Science Knowledge	Clear evidence for broader application and new knowledge/skills.	No redundancy.	Experts noted an increase in sophistication from 5-8 and from 8-11 in this strand.	Strong Differentiation
FI: Reflecting on Scientific Knowledge	Clear evidence for broader and deeper applications, prerequisite and new knowledge/skills.	No redundancy.		Very Strong Differentiation.
FI: Using Life Science Knowledge	Clear evidence of broader and deeper applications, prerequisite and new skills.	No redundancy.	Experts identified no items addressed Heredity in 8th and 11th. There was clear progression in Organization of Living Things and Ecosystems.	Very Strong Differentiation.
FI: Using Physical Science Knowledge	Clear vertical relationships with broader and deeper applications, prerequisite skills, and new skills.	No redundancy.	Experts noted that all strands except for Waves and Vibrations made definite progression through the grades.	Very Strong Differentiation.
FI: Using Earth Science Knowledge	Clear vertical relationships with broader and deeper applications, prerequisite skills,	No redundancy.	Experts noted more of a progression in Hydrosphere from 5 to 8 than 8 to 11 and in Atmosphere	Very Strong Differentiation.

	and new skills.		and Weather from 8 to 11 than 5 to 8. Experts also noted that there seemed to be a disparity in the number of questions addressing the solar system.	
Supported Independence	Partial evidence for broader and deeper applications and prerequisite and new knowledge/skills was noted for Physical Science and Earth Science. Limited change was noted for Life Science for deeper applications and new information.	No redundancy.	Items for Constructing New Knowledge and Reflecting on Science only had one question from each strand. They did note a disconnect for Reflecting on Science between grades 8 and 11.	Adequate Differentiation. Including more items for underrepresented strands and reviewing items would improve this assessment.
Participation	Partial evidence for broader and deeper applications and Prerequisite and New knowledge/skills for Life Science. Limited evidence for all relationships for Reflecting on Scientific Knowledge and Physical Knowledge, and for broader applications and new knowledge/skills for Earth Science.	Limited evidence for Earth Science.	Items for Constructing New Knowledge only had one question from each strand. There also seemed to be digression in content from grade 8 to 11 for Reflecting on Scientific Knowledge and Life Science. Experts noted a digression or no progress in Physical Science for Waves and Vibrations and Motion and in Earth Science	Needs Improvement. Develop clearer relationships within strands for differentiated content. Either a review of the possible progression of skills or development of additional items is needed.

			Atmosphere and Weather and Hydrosphere.	
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**Criterion 6:** The expected achievement for students is for the students to show learning of grade referenced academic content.

Since inferences from scores on alternate assessments are to be made about what students know or can do in an academic domain, the achievement standards should consider those indicators which provide information about student performance rather than system or teacher performance. Evaluation of this criterion is done through special education review of state documents related to alternate achievement standards. The strongest inference can be made that the student learned the content if: (a) there is evidence the student did not already have the skill (e.g., through use of pretest, baseline or previous year's learning), (b) the skill is performed without teacher prompting, and (c) the skill is performed across materials/lessons to show mastery of the concept versus rote memory of one specific response.

## Results

### Inferences about Student Learning in General Curriculum

#### Level of Accuracy

In all assessments, to receive credits items must be correct (accurate). From the draft Technical Manual (July 13, 2006), the summary of panel recommendations for MI-Access Functional Independence was for most items to be correct (roughly 60-70% across grades in math and in language arts) for students to have "Attained" state standards. Median scores are provided in both language arts and math. From the MI-Access Spring 2007 Handbook, the points needed to attain the performance standard in language arts for Participation ranges from 19-23 at the lower end of range (Table 2, p. 7). The highest score possible is 60 points (from top points for "Surpassed"). For math, the lower range is 17-28 out of 60 (Table 3). Overall accuracy in language arts for Supported Independence is 23-33 out of 60 points (Table 4). For math for Supported Independence it is 16-25 out of 60 points (Table 5). Overall expectation for points earned for either Participation or Supported Independence is less than 40% on average. The inference to be made based on student accuracy is much stronger for Functional Independence level than for Supported Independence and Participation.

#### Level of Independence

In Functional Independence, students must perform the item as presented in the test booklet with minimal to no assistance. Overall a high inference can be made that the scores reflect the student's performance. For Supported Independence, more credit is given if students perform with less assistance. The top score requires no teacher assistance and modeling or full physical assistance receives no credit. For Participation, the same scale is used, but more points are given for independence and modeling is allowed, but again no hand over hand assistance is allowed. This system is clearly focused on student versus teacher performance in these scoring rubrics. In contrast, the low total percent of points that are needed to attain the standard seems to make it possible for students to meet the standard with modeling in the Participation level and with verbal/physical cues in the Supported Independence level on every item.

## **Other Sources of Inference**

Other potential sources for making inferences about student learning are using pre/post testing to show new learning, giving more weight to complex items, assessing generalization across people or settings, or assessing conceptual generalization by using more than one task for the same asset. None of these options were pursued in this assessment due to its format. This assessment is designed to assess a range of standards in an efficient format.

## **Overall**

The MI-Access is clearly focused on the student's performance at all levels- Functional Independence, Supported Independence, and Participation. All items must be accurate to be counted and more credit is given to responding without teacher assistance. Systems that give differentiated credit based on teacher assistance need to be carefully reviewed during standard setting for the actual performance that counts for having attained the standard. If standards are set too low in the Supported Independence and Participation levels, the assessment in practicality reflects performance with extensive teacher assistance. Through professional development on prompt fading, the state may be able to set higher criteria for attainment.

**Criterion 7:** The potential barriers to demonstrating what students know and can do are minimized in the assessment.

Criterion 7 provides information about accessibility of the alternate assessment to the wide range of students with significant cognitive disabilities. Special education experts reviewed the alternate assessment and the accompanying administration manual to examine the extent to which a wide range of students to complete tasks within the assessment within the level of independence and accuracy expected by the state. Experts used four definitions to describe how students were able access the assessment items.

**No provision:** This type of student would not be able to demonstrate knowledge/skill on the assessment; needed supports are nonexistent or insufficient to help this type of student demonstrate learning.

**Flexibility built into tasks:** This type of student would be able to demonstrate knowledge/skill because of flexibility in administration. Flexibility is built into the items (e.g., teacher choice/design in portfolio, scaffolding in scripted performance events).

**Accommodations:** This type of student would be able to demonstrate knowledge/skill because of allowable accommodations. Accommodations are not built into items/tasks, but are described in the test administration materials and may be applied to this type of student. Accommodations do not change the construct being measured.

**Modifications:** This type of student would be able to demonstrate knowledge/skill because of modifications in assessment materials, administration procedures, etc. Modifications are not built into items/tasks, but are described in the test administration materials and may be applied to this type of student. Modifications do change the construct being measured.

The following table summarized the findings for the ELA, Math, and Science assessments. Either flexibility was built into the AA-AAS tasks or accommodations were available that minimized barriers for all students.

*Minimizing Barriers for FI, SI, and P AA-AAS items for ELA, Math, and Science*

Type of student	<b>No provision</b> for students with these characteristics	Can do alternate assessment as designed, with <b>flexibility built into tasks</b>	Can do with <b>accommodations</b> available/ stated (no change in construct measured)	Can do with <b>modifications</b> or supports stated (may alter construct being measured)
Visual impairment/ legally blind	Y	Y   N	<b>Y</b> N	Y   N
Hearing impaired	Y	Y   N	<b>Y</b> N	Y   N
Deaf/ blind	Y	Y   N	<b>Y</b> N	Y   N
Nonverbal; responds using printed words	Y	<b>Y</b> N	Y   N	Y   N
Nonverbal; responds using pictures	Y	<b>Y</b> N	Y   N	Y   N

Nonverbal; responds using manual signs	Y	Y N	<b>Y</b> N	Y N
Nonverbal; responds using eye gaze	Y	Y N	<b>Y</b> N	Y N
Verbal but no use of hands	Y	Y N	<b>Y</b> N	Y N
Communicates with objects or by indicating yes/no	Y	Y N	<b>Y</b> N	Y N

### Comments and Recommendations

1. Experts noted that the assessment accommodations section of the Coordinator and Assessment Administration manual (2007/2008) as well as each assessment and accompanying materials made it very clear that these assessments are designed to allow accommodations that do not change the construct being measured to allow all students to appropriately participate.
2. The emphasis of Universal Design for Learning was noted by the experts in the manuals and PowerPoint presentations. The use of UDL by the vendors in test development and teachers in instructional practices will continue to help reinforce the demonstration of student progress in the general curriculum.

<b>Criterion 8:</b> The instructional program promotes learning in the general curriculum.
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The following sections provide information about the professional development materials and program quality indicators.

### **Professional Development**

Special education experts reviewed the professional development materials including seventeen presentations provided by the state, the FI and P/SI handbook and assessments, the item specifications, the MI-Access website, and the extended standards. Evaluation of the professional development materials asks questions of the resources based on the alignment criteria.

**Are teachers trained to review grade level content standards and extended standards?** The extended standards are written with the overarching state standards on the same page. This provides a clear picture of how state standards are extended for the population taking the alternate assessment. These standards are available on a state website and referenced in state training.

**Are teachers trained to use grade level or grade bands to determine what to teach? Do they receive guidance for increasing expectations across grade bands?** The extended standards have been generated for grade bands for the SI and P assessments so there is a clear expectation in the state materials for grade band consideration. In contrast, the professional development materials did not provide examples of how to increase expectations within a content strand across grade levels nor how to adapt grade level content for students with differing abilities. Instead, the professional development was specific to the alternate assessment.

**Are teachers trained in how to align instruction to standards (e.g., performance and content centrality)?** No specific information on how to align instruction to the standards was found. For example, training might include consideration of performance and content centrality or the process used to create a standards-based IEP.

**Are teachers trained in alternate achievement targets including: a) priorities set by the state for breadth and range of content coverage and b) how to gauge instruction for varying levels of depth of knowledge?** The provision of extended standards and training in alternate assessment does provide teachers with a clear focus for the breadth and range of content coverage expected for this population. The training does not provide information on depth of knowledge (e.g., Bloom's taxonomy) except incidentally as reflected in preparing for the alternate assessment.

**Are teachers trained to promote active student learning of generalized academic content?** The scoring information for the alternate assessment promotes the concept of fading teacher assistance (independent responses score higher) and active student learning (hand over hand

guidance does not receive credit). More explicit training in methods to fade prompts, teach to mastery, and promote generalization may be beneficial.

**Are teacher trained to adapt content for students with sensory impairments? Physical impairments? Different levels of symbolic communication?** The entire system is consistent with the concept of differentiating instruction for different symbolic levels as the three levels match well to students with abstract symbolic, concrete symbolic, and presymbolic communication. More information on teaching activities for these levels may be needed as well as additional information on how to adapt instruction for sensory and physical impairments.

**Are teachers trained in best instructional practices for students with significant cognitive disabilities?** Because the professional development is focused on the assessment, the extent to which teachers receive information on best practices such as collaborating with general educators, using assistive technology, and promoting self determination is unclear.

**Recommendations:** The professional development conducted for the alternate assessment system is directly tied to assessment, but provides information that can enhance instruction such as the provision of extended standards and a scoring system that promotes prompt fading. Additional professional development materials may be available in the state that are not part of the assessment training. It is recommended that if these exist, assessment training provides explicit information on resources on how to teach to state standards. Teachers may especially benefit from information on how to align instruction to state standards, adapt grade level content, plan for different levels of depth of knowledge, individualize for students with diverse needs, and promote best practices.

### Program Quality Indicators

Special education experts reviewed the FI and P/SI handbooks, professional development/ training materials, the item specification documents, the science artwork, and the extended standards for evidence of overall program quality indicators. The table below summarizes their findings.

<b>Does the alternate assessment and professional development promote:</b>	
1. opportunities for instruction in general education classrooms for students with significant cognitive disabilities?	No- The experts could find no evidence on how to teach in general education classrooms.
2. opportunities for instruction with typical peers for students with significant cognitive disabilities?	No- The experts could find no evidence on how to promote inclusion with typical peers
3. opportunities for students with significant	Limited- There was some evidence that self determination was promoted. The evidence

cognitive disabilities to make choices, problem solve, self-advocate, self-evaluate?	was found in the assessments themselves (it was more commonly found for the P/SI students), is mentioned in the P/SI handbook, and is included in a few ELA extended standards.
4. the provision of assistive technology for students who need it?	Yes- This indicator was evident in the in the pictures provided in several powerpoint presentations as well as in the P/SI handbook, was consistently emphasized and explained in several of the evidence sources.
5. the access and use of typical classroom resources within instruction (e.g., science kits, grade level books, textbooks)?	No- The experts could find no evidence promoting the use of general education resources.
6. literacy being promoted across the content areas for students with significant cognitive disabilities (e.g., the pairing of text with picture symbols and objects)?	Yes- Experts were able to find several examples of the use of literacy skills in the assessment tasks, in the presentations, and the handbook. Experts particularly noted the strength of the science materials in this area.
7. the meaningful linking of academic skills in functional contexts?	Yes- The item specifications provided performance situations in which items were written or presented using real world contexts. Functional contexts were also evidence throughout the three assessments.

### OVERALL SUMMARY OF THE EIGHT CRITERIA

The primary strength of the Michigan Alternate Assessment System (MI-Access) is its inclusiveness of the heterogeneity of students with significant cognitive disabilities. By using formats at three levels and providing instruction on how to assess students with sensory and physical impairments, the system is well-developed for diverse students to show what they know. The system is also clearly focused on student performance and strong inferences can be made about student learning. The weakness of the system stems from its strength. In developing a three level system, the amount of work to extend standards and create alternate assessment items was tripled. In some cases, these items and extensions are well-aligned to the standards. The higher level (FI) has nearly perfect focus on academic items and the strongest content centrality. Alternate assessment items that are not academic in the lower levels (SI and P) are for the most part foundational to academic success. Thus, it could be concluded that overall the grade level standards are well represented. In contrast, when a finer grained analysis is conducted to consider content centrality, some of the academic items and some of the extended standards do not reflect clear links. Some additional development of these items is recommended. During this development, consideration should also be given to grade level differentiation which, similar to content centrality, currently reflects both strong and weak areas.

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## Glossary of Terms

Term	Definition
Academic	The target for achievement must be academic content (e.g., reading, math, science) that is referenced to the student's assigned grade based on chronological age; target must reflect the major domains of the curricular area (e.g., strands of math) as recognized by national curricular societies
Balance of Representation	The <i>balance of representation</i> criterion is used to indicate the extent to which items are evenly distributed across the content standards and the objectives under the content standards. In our example measurement content standard with five objectives, we would expect items to be evenly distributed across the five objectives.
Foundational Skills	Skills which are the assumed competence at all grade levels specific to an academic context (e.g., not simply sitting in a chair) and are commonly embedded in academic instruction (e.g., turning the page of a book)
Categorical Concurrence	<i>Categorical concurrence</i> is the consistency of categories of content in the standards and assessments. The criterion of categorical concurrence is met if the same or consistent categories of content appear in both the assessment and the standards.
Content Centrality	The extent to which the focus of achievement maintains fidelity with the content of the original grade level standards; rated on a 3 point scale of <i>near link</i> , <i>far link</i> , <i>no link</i>
Backmap	Functional activity is retrofitted into the target item
Mismatch	Linked to the incorrect standard (e.g., clerical error)
Overstretch	Target item is "watered down" so the link is lost
Depth of Knowledge (DOK)	Taxonomy for determining the levels of response processes required by student on the target item
Performance Centrality	The degree of match between types of performance (e.g., select, identify, compare, analyze, evaluate); rated on a 3 point scale of <i>all</i> , <i>some</i> , <i>or none</i>
Range of Representation	<i>Range-of-knowledge</i> correspondence examines the alignment of assessment items to the multiple objectives within the content standards. Range-of-knowledge correspondence is used to judge whether a comparable span of knowledge expected of students by a content standard is the same as, or corresponds to, the span of knowledge that students need in order to correctly answer assessment items. The range-of-knowledge numeric value is the percentage of content standards with at least 50% of the objectives having one or more hits.

## Appendix A

### Item Distribution by National Stands/Domains

#### Functional Independence

##### *FI ELA AA-AAS Item Distribution by National Strands*

Components	Primary		Secondary	
	<i>N</i>	%	<i>N</i>	%
Reading	288	97.6	3	1.0
Writing	7	2.4		
Speaking				
Listening				
Viewing/Visual			39	13.2
Research				

##### *FI Math AA-AAS Item Distribution by National Strands*

Components	Primary Alignment	
	<i>N</i>	%
Numbers and Operations	112	48.3
Algebra	9	3.9
Geometry	20	8.6
Measurement	73	31.5
Data/Probability	18	7.8

##### *FI Science AA-AAS Item Distribution by National Standards*

Components	<i>N</i>	%
Science as Inquiry	1	.8
Physical Science	46	39.0
Life Science	39	33.1
Earth & Space Science	29	24.6
Science & Technology		
Personal and Social Perspectives	3	2.5
History and Nature Science		

#### Supported Independence

##### *SI ELA AA-AAS Item Distribution by National Strands*

Components	Primary		Secondary	
	<i>N</i>	%	<i>N</i>	%
Reading	14	53.8		
Writing	4	15.4		
Speaking	3	11.5	2	20.0
Listening	4	15.4	2	20.0
Viewing/Visual	1	3.8	3	30.0
Research			3	30.0

*SI Math AA-AAS Item Distribution by National Strands*

Components	<i>N</i>	%
Numbers and Operations	13	41.9
Algebra	4	12.9
Geometry	3	9.7
Measurement	7	22.6
Data/Probability	4	12.9

*SI Science AA-AAS Item Distribution by National Standards*

Components	<i>N</i>	%
Science as Inquiry		
Physical Science	8	16.3
Life Science	27	55.1
Earth & Space Science	5	10.2
Science & Technology		
Personal and Social Perspectives	9	18.4
History and Nature Science		

Participation*P ELA AA-AAS Item Distribution by National Strands*

Components	Primary		Secondary	
	<i>N</i>	%	<i>N</i>	%
Reading	6	50.0	1	8.3
Writing				
Speaking	2	16.7	2	16.7
Listening	4	33.3	1	8.3
Viewing/Visual			8	66.7
Research				

*P Math AA-AAS Item Distribution by National Strands*

Components	Primary		Secondary	
	<i>N</i>	%	<i>N</i>	%
Numbers and Operations	9	60.0		
Algebra				
Geometry	3	20.0		
Measurement	3	20.0		
Data/Probability				

*P Science AA-AAS Item Distribution by National Standards*

Components	<i>N</i>	%
Science as Inquiry		
Physical Science	14	31.1
Life Science	19	42.2
Earth & Space Science	2	4.4
Science & Technology		
Personal and Social Perspectives	10	22.2
History and Nature Science		

## Appendix B

### Alignment of Extended Standards to National Content Strands

#### Functional Independence

##### *Number and Percentage of FI Extended Standards Aligned to the ELA Components*

<i>All Extended Standards</i>		
Components	<i>N</i>	<i>%</i>
Reading	211	46.4
Writing	111	24.4
Speaking	82	18.0
Listening	44	9.7
Viewing/Visual	6	1.3
Research	1	.2

##### *FI Math Extended Standards Distribution by National Strands*

<i>Primary</i>		
Components	<i>N</i>	<i>%</i>
Numbers and Operations	142	48.0
Algebra	7	2.4
Geometry	23	7.8
Measurement	93	31.4
Data/Probability	31	10.5

##### *FI Science Extended Standards Distribution by National Standards*

Components	<i>N</i>	<i>%</i>
Science as Inquiry	21	12.0
Physical Science	45	25.7
Life Science	47	26.9
Earth & Space Science	37	21.1
Science & Technology	4	2.3
Personal and Social Perspectives	18	10.3
History and Nature Science	3	1.7

#### Supported Independence

##### *SI ELA Extended Standards Distribution by National Strands*

Components	<i>N</i>	<i>%</i>
Reading	44	50.6
Writing	25	28.7
Speaking	15	17.2
Listening	3	3.4
Viewing/Visual		
Research		

*SI Math Extended Standards Distribution by National Strands*

Components	<i>N</i>	%
Numbers and Operations	27	35.5
Algebra	2	2.6
Geometry	12	15.8
Measurement	25	32.9
Data/Probability	10	13.2

*SI Science Extended Standards Distribution by National Standards*

Components	<i>N</i>	%
Science as Inquiry	16	12.6
Physical Science	35	27.6
Life Science	28	22.0
Earth & Space Science	24	18.9
Science & Technology	3	2.4
Personal and Social Perspectives	19	15.0
History and Nature Science	2	1.6

Participation*P ELA Extended Standards Distribution by National Strands*

Components	<i>N</i>	%
Reading	37	56.1
Writing	13	19.7
Speaking	12	18.2
Listening	4	6.1
Viewing/Visual Research		

*P Math Extended Standards Distribution by National Strands*

Components	<i>N</i>	%
Numbers and Operations	14	36.8
Algebra		
Geometry	6	15.8
Measurement	14	36.8
Data/Probability	4	10.5

*P Science Extended Standards Distribution by National Standards*

Components	<i>N</i>	%
Science as Inquiry	10	11.5
Physical Science	30	34.5
Life Science	20	23.0
Earth & Space Science	10	11.5
Science & Technology	5	5.7
Personal and Social Perspectives	12	13.8
History and Nature Science		